AMERICAN GAS ASSOCIATION MONTHLY

Vol. IV No. 1

JANUARY, 1922

LET us have a year of good-will, of faster friendships among ourselves, of making new friends. Let us have a year of charity.

Let us have a year of fresh aspirations, of rekindled visions, of promise. Let us have a year of things accomplished but let us also have a year of hope.

Let us have a year of belief in ourselves, in our purpose, in our strength to live our purpose, and let us too, have belief in unbelievers. Let us have a year of faith kept.

Let us have a new year!

C O N T E N T S

VOLUME IV JANUARY, 1922 NUMBER 1

Abstracts of Technical Articles of Interest to Gas Men 48
Affiliated Associations 63
All Gas Kitchens in Hotels and Clubs of the National Capital 12
And We Spend Money in Advertising 2
Classified Directory—Manufacturers of Gas Equipment 53
Editorial 2
Employment Bureau 64
Engineering Service for Manufacturer Company Members 37
Federal Income Tax as Applied to Gas Companies 17
From an Exhibitor 37
Getting the Public Eye and Ear 23
Good Cheer 16
Good Will Advertisement No. 21 31
Harding Excerpt 14
How Much is a Bath? 38
Love's Labor Lost (Cartoon) 5
Making Your Window Bring Business 36
Members Since the First of October 15
Newspaper Publishers Asked to Give Utilities a Square Deal 32
Public Loses by Misdirected Public Regulation, The 3
Public Relations 6
Rate Changes 51
Report of the American Committee on Electrolysis 47
Report of Chemical Committee 45
Report of the Committee on Cast Iron Pipe Standards 42
Report of the Committee on Deposits in Gas Pipes and Meters 39
Signs in the Air 33
Welsbach Advertising 34
1922 Meeting of Wisconsin and Illinois Gas Associations 13

AUTHORS

Atkinson, H. M. "The Public Loses by Misdirected Public Regulation" 3
Ayer, F. W. "Newspaper Publishers Asked to give Utilities a Square Deal" 32
Forbes, H. W. "Federal Income Tax as Applied to Gas Companies" 17
Forstall, Walton. "Report of the Committee on Cast Iron Pipe Standards" 42
Gilchrist, John F. "Public Relations" 6
Lunn, C. A. "Report of the Chemical Committee" 45
Morhous, O. A. "Report of the Committee on Deposits in Gas Pipes and Meters" 39
Ransdell, D. D. "All Gas Kitchens in Hotels and Clubs of the National Capital" 12
St. Clair, Labert. "Getting the Public Eye and Ear" 23

FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

AMERICAN GAS ASSOCIATION MONTHLY
OFFICE OF PUBLICATION, BRATTLEBORO, VT.
SUBSCRIPTION RATE - - - $3.00 PER YEAR

Application for entry as Second Class Matter December 28th, 1921, at the Post Office at Brattleboro, Vt. under Act of March 3, 1879 and for acceptance for Mailing at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917, pending.

American Gas Association Monthly

Vol. IV JANUARY, 1922 No. 1

And We Spend Money in Advertising!

This is a True Story

A man stepped from a taxicab to the curb and peering around the meter inquired, "How much?" "A dollar and ten cents," was the answer. "Can you change five?" asked the man. The driver searched his pockets thoughtfully. "Nope," he returned.

The man on the curb swung about impatiently, looking anxiously up and down the empty street. Suddenly his eye brightened. He was in the shadow of the building of the City Gas Company. "A friend in need," he said to himself, as bidding the driver wait a moment he crossed the street and disappeared through the revolving doors.

At one window was strung out a long line of a dozen or more patient people; at a second window there were two or three men. The man chose the second window. After several moments of waiting and just as the man in front of him was moving off, the clerk noticed our friend. He was the last man, the other line was very long, and yet the clerk, with his eye still on him, coolly took a card from somewhere inside and thrust it before the man's very nose. The card read,—"Next window."

"Can't you change a five dollar bill for me?" the man asked. "Naw—busy," was the indifferent answer. "It will take only a moment," urged the man. "You'll have to go to the next window," the clerk retorted. And then the man became interested. He leaned forward. On the other side of the window before the clerk were stacked piles of currency. Almost with a lift of the hand a five dollar bill could be changed. The courtesy in the man's manner was marked as he said pointedly,—"You have the change right there before you, it's a matter of a moment. Can't you spare a moment?"

The man stood to his guns. "I got my books to balance—you'll have to go to the other window." The man went—not to the other window—but out.

What's the man's opinion of that clerk? A chain is as strong as its weakest link. What's the man's opinion of the entire gas company? Put yourself in his place.

AMERICAN
GAS ASSOCIATION
MONTHLY

Vol. IV JANUARY, 1922 No. 1

The Public Loses by Misdirected Public Regulation

H. M. ATKINSON, Georgia Railway and Power Co., Atlanta.

THE development of public utilities and the improvement of the service which they render are dependent on observance of economic laws; the character of the service of a public utility will exactly reflect the degree to which economic laws are observed.

The business of public utilities may be divided into three phases, as follows:

(a) Investment of Private Capital.
(b) Labor.
(c) Government Regulation.

The economic law that controls private capital is—

Private capital must be assured a permanent fair return; otherwise it will seek other fields and will not be available for investment in public utilities. The economic law governing labor is—

Labor must furnish a full day's work in return for a full day's pay; otherwise production per man will decrease, and as wages are paid out of production, not out of capital, less production means less money available for wages.

The economic law controlling government regulation is—

The regulating body must fix rates that will yield operating expenses (including fair and just wages), taxes, proper allowance for renewals (commonly called depreciation), and a reasonable return on the fair value of the property devoted to public use; otherwise impairment of the service and ultimately total cessation of the service is certain.

Speaking of the public utilities of the country as a whole, the public at the present time is suffering great loss due to the fact that those responsible for rate regulation for years past have ignored the above economic laws. The public utilities throughout the country

generally have not been permitted to earn a reasonable return on the fair value of their property devoted to public use. This is an unsound economic condition which has impoverished the public utilities and thereby has caused the cessation of an enormous amount of constructive work. Some of the burdens unjustly forced on the public as a result of this condition are:

(a) Unemployment.
(b) Decreased purchasing power on the part of the public.
(c) Stagnation of general business.
(d) Higher cost of service.
(e) Poorer service.

The steam railroads of the country furnish another concrete illustration of how the public is losing as a result of rate regulation which ignores economic laws. The steam railroads also have been brought almost to the verge of ruin by uneconomic government regulation and interference with their business. For many years before relief came in the shape of higher rates, the railroads had been regulated to death and not permitted to earn a reasonable return on the fair value of their property devoted to public use. In addition, railroad unions supported by the Government have artificially forced average wages per man higher and higher and production per man lower and lower until the average pay per man is more than the average production per man is worth. Now the unions must voluntarily agree to a readjustment of railroad wages, or economic laws and public opinion combined will force a readjustment.

The increase in railroad rates which was coincident with declining business came too late. Consequently it will take a long period of just and fair treatment to put the railroads on their feet again. In the meantime the railroads have been compelled by lack of money (due to inadequate rates and high wages) to stop all large constructive developments and improvements of their properties. Thus uneconomic regulation of the railroads has brought about the same unfavorable results as uneconomic regulation of the public utilities.

If we add to the results of the unfavorable condition of public utilities and steam railroads the results of the continuance of war methods of Federal taxation, we have largely explained the present business depression and widespread unemployment. The country must get back to the first simple principles of regulating and interfering with business in accordance with economic laws, which simply means fairly and justly. The country must also conduct its own governmental business economically and efficiently.

Constructive development and improvement of the properties of public utilities and steam railroads on a broad scale, which will effect savings in the operation of the properties and produce service for the public at the lowest possible cost, open up the only road leading to permanent and legitimate reduction of rates. "Cost" of service, to conform to economic laws, must include operating expenses (including proper maintenance and fair wages), taxes, sufficient allowance for renewals (commonly called depreciation), and a reasonable return on the fair value of the property devoted to public use. Regulation which has not recognized all of these elements

of cost of service has failed, and the public is the chief sufferer.

Just and fair regulation of public utilities and railroads, together with reform of our present system of Federal taxation, will result in employment for everybody. Employment for everyone who wants work is the only cure for the prevailing unrest and lawlessness. The great mechanism of business must be repaired. The people have been misled to believe in practices which have cracked the mainspring of business.

In addition the constructive genius of the individual must be fostered and encouraged, not stifled and chloroformed as at present. The country owes its rapid growth and development largely to the initiative and constructive genius of the individual. The justification of the reward for this service must be recognized. Until we get back to that idea we are not going to make in the future anything like the headway we have made in the past.

The recognition of these plain simple principles is necessary to put everyone to work and to bring prosperity back. The public has most at stake in this problem and is losing most at present. Some day the public will learn the truth, will recognize how unnecessarily and how greatly it has lost, and will insist on fair and just regulation of public utilities and railroads.

"By courtesy of Collier's, the National Weekly."

Public Relations

Address of Mr. John F. Gilchrist, Vice President, Commonwealth Edison Company, Chicago, and former president, National Electric Light Association, before the annual convention of the Illinois Independent Telephone Association, Springfield, Illinois, November 8, 1921.

ALL public utility men in these days are giving a great deal of thought to the question of public relations. They are themselves beginning to realize the position which they occupy and which they should endeavor to maintain in the list of human activities, and they desire that the public shall have the opportunity of forming its opinion, wishing that it may have the same point of view.

We want to know our customers better, and we want them to know us better, because a close relationship of this kind is most conducive to a mutual understanding of the problems and points of view of each, and such understandings lead to recognition of each other's rights, and agreement on a basis of mutual interest. It has been my good fortune to have had the opportunity, as a part of my duties, to take part in this work, and it gives me great pleasure to come down here today and discuss this matter with you.

The more I see of our business and its problems, and the business relationships which result from its existence, the more I feel that the interests of the public and the companies with regard to public service are as nearly mutual as can be the case with any activity in the world. Our services are such that every human being has need of them in the ordinary processes of living, and in view of the fact that the utilities are rendering service and expect to continue to render it, without profit in the sense that it is ordinarily known, there cannot be any selfish interest.

It may perhaps surprise you to hear me say that the utilities are rendering service without profit, and expect to continue to do so, but that is the belief of the men in the business who have given the closest study to it. I do not consider the fair value of the money, and the brains and work which are essential to the business, a profit, but merely as parts of the cost. Public service cannot be rendered without a plant and an organization, and these elements cannot function properly unless they are ample, and unless there are reserves, either in property or in reasonable surpluses which can provide such plant, and all of such resources, whether in money, credit, or physical property, have their fair market value in the world, which must be paid and which must be considered a part of the cost of rendering the service.

Therefore, I lay down a rule in the operation of utilities, "Run your business in the best interests from the broadest possible viewpoint of your customers and the public, and you need give no thought whatever to your security holders or those having other forms of ownership, as their interests will take care of themselves." In other words, the best interests of your customers and the public cannot possibly be served properly unless those who have put honest value into your business are paid a fair return. Any business which does not render a useful and beneficial service to mankind cannot survive.

This is recognized by all who have given intelligent thought to the matter. If you want success, render service to man in an honest, competent, complete way, and your reasonable emoluments and profits will follow.

The public utility business of the country in its field of rendering service to mankind has reached a stage beyond the possibility of exploitation by those who would draw from it an unreasonable personal profit, but it has also reached the stage of stability which assures those who depend upon it for service, those who have made it their life work, and those who have invested their money in it, a safe, permanent and satisfactory result. If your boys want to be most highly useful citizens, if they want to embark in a life work which will be satisfying, because it is rendering the most essential service to man, one which will bring them in contact with the best of thought and the best of people in the communities, with every worthy activity which attracts people in these days, and which will bring them dignity and honor and a reasonable compensation, advise them to go into the utility business; but if they are looking for an opportunity to become suddenly rich as the result of chance, advise them to keep out of the utility business.

In considering and becoming better acquainted with this business of ours, let me dwell somewhat upon what might be termed its romantic side. If I were capable of it, I would like to draw a great human-interest picture of the development of the utilities during the past half century, and of what they have done and are doing for mankind, dealing with the question both from the standpoint of the notable achievement of the young men and women in the business, and from the standpoint of the service to the user. Man's strength is his means of life, and the more strength he has, the more chance he has of acquiring those things which make life best worth living. The great fields of the public utilities are to conserve the physical strength of man, and to give him those things which are necessary to his health and life for the least expenditure of his energy, leaving the greater part of it to be expended for higher accomplishment.

As for romance, the oriental or East Indian carrying trade, with its atmosphere of spices and perfume laden breezes, with its visions of rich jewels and beautiful fabrics, "The Road to Mandalay, where the flying fishes play," to quote Kipling, the mixing of the nations as told in song and story, the trades of wars and husbandry, the wresting of precious metals from the earth, the conquest of the arctic areas or the tropical lands, are not more replete with romance that the story of man's mastery of distance, his harnessing of nature's forces, and the way in which he has made the great genii of the utilities serve the human race, these genii which have made of man a superman.

What urchin of one hundred years ago, droning over his lessons, enumerating the five senses of man and the higher animals as hearing, seeing, smelling, tasting and feeling, could have conceived the awe-inspiring increase in the range of these powers, which, within the span of a human life, have been conferred upon man, and to the greatest extent, by these then unknown genii, the utilities?

A century ago, primitive man, a perfect animal, ranging these Illinois prai-

ries, might on still nights have noted the howl of the prairie wolf coming from distances of four or five miles, or by placing his ear to mother earth, the original telephone conductor, he may have been able to make out the hoofbeats of his enemies' ponies while still an hour's distance away, but see how these primal faculties have been magnified in the man of today. Standing in the same spot, a pair of receivers at his ears, he listens at will to the surging waves of the Pacific, or to the turmoil of the great marts along the Atlantic Coast, or stranger yet, he hears distinctly the human voice coming from ships midway in the oceans on either side of this continent, even from the far shores of the continents themselves, and the tones are as clear and recognizable as though the person speaking were in an adjacent room. Truly, how greatly has the human hearing distance been extended.

In matters of sight, development is quite as startling, although in a slightly different way. Now we see by the reproduction of scenes, but see just as surely. The range of man's sight fifty years ago was fifteen to twenty miles for a sail at sea, seventy-five to one hundred miles for the highest mountain ranges in a clear atmosphere, but now, through the agency of moving pictures, the great scenes of the earth are enacted in the pictures so generally and so shortly after their actual happening that the humblest people to all intents and purposes look with their own eyes on the sights of the entire world.

In the same way, modern transportation brings the fruits and flowers of the tropics, the hardy pines and flora of the arctic regions, the perfumes and spices from the ends of the earth, so that their fragrances are inhaled by the man of today, although he may never have had the opportunity of visiting the places where they are produced. The delicacies brought from all over the world and gathered in our great communities delight the taste of the modern. Fresh sea food from the salt water along our own shores, and even from shores more distant, fresh fruit and game from distances which would have been unheard of in the time of our grandfathers, grace the table and delight the palate of modern man, and as for feeling, the station operator in the high Sierras throws his switch, and in San Francisco and Coast cities hundreds of miles away, immediately the consumer feels, in radiant heat or whirling power, the touch of the operator's arm. From one side of the continent to the other, and even from one continent to another, the human arm, with its long distance electrical extension, puts machinery in motion and conveys communications and blessings, even as our forefathers performed such services by laying on of hands.

Then let us go out and tell the people who are our clients all about these wonderful industries of ours, that they may appreciate their greatness and their possibilities, for the development is only started, how they are serving man, making his life easier and helping him in his task of providing a livelihood for himself and his family. Tell them of the problems and difficulties, the why and the wherefore, that they may cease to criticise and may become boosters.

This brings me to a discussion of more of the detail of a work which is being done in Illinois at the present time, which has enjoyed the best of cooperation on

the part of your officers and yourselves, and with regard to which I think it is the general feeling that a great good is being accomplished. I refer to the work of the Illinois Committee on Public Utility Information.

As you probably know, this Committee is now in the third year of its work. In its personnel it draws from the several different utilities of the state, and its roster contains the names of some of the most prominent men in these utilities. Every week it issues to every newspaper and to every utility manager in the state a bulletin containing articles which, as a result of careful conference, it is believed will be of value, if published, in helping to create favorable public opinion towards the utilities. From an attitude of caution, and in some cases indifference, the papers of the state have come to look upon the information of the Committee as reliable and interesting, which they can print without fear that they are being placed in a false position. This is best evidenced by the growth in the use of the material. It is being used at this time at almost four times the rate which prevailed during the first year of the committee's existence, which means the equivalent of many newspaper pages annually of information about the utilities.

The object in sending the matter simultaneously to the managers of the utilities is that they may know what is going to their papers, and that they may take it upon themselves to urge their particular local editors to carry as much as possible of this matter. This part of the work I wish to urge upon you as being a most important one. It may seem to you a matter of little importance and hardly worth the attention necessary to each week urge your local editor to remember the utilities, and the fact that it is really the public he is helping when he helps put the utilities in the proper light. However, if each one of you will in your own town or group of towns do his share, it will do much to help along this work.

There are, in addition to sending out this bulletin, many other kinds of work. The Committee prepares material for speeches and talks for men in the industry to use themselves, and also maintains a very live Speaker's Bureau, which is filling numerous engagements each week where speakers are wanted throughout the state at business and social gatherings. The Committee from time to time is creating or reprinting pamphlets and booklets bearing on various phases of the industry, and offering them at cost, not only to its own supporters in Illinois, but to active utility people throughout the country.

Following the leadership of Illinois, some thirteen or fourteen states have taken up this work. Their plan has been much the same as ours. The work in each state is in the hands of a Committee consisting of prominent representatives of the different utilities in the state. This results, aside from the direct work of the Committees, in a great deal of newspaper distribution through the ordinary editorial interchange.

The cost of the Committee's work is not great in proportion to the interests of the business in the state, and the funds are raised by contributions of a very small percentage of the companies' gross annual income made by any of the utilities in the state who appreciate their responsibility and desire to have a hand in this work. I commend to you the work

of the Illinois Committee, and hope that you will support its efforts.

Then there is another matter which is absorbing the thought of utility men today, and which is very near to the hearts of most of us, regarding which I would like to say a few words.

Not only have these utilities offered to man personal services of the greatest value, but themselves are to a greater extent now offering the opportunity for investment of his surplus earnings in a form of investment which is safer than anything else he can put his money in, this great reservoir of his stored energy which will furnish him support, and enable him to enjoy the comforts to which he has been accustomed when his physical powers are no longer capable of bringing such support, and providing for the wants, education and culture of his children and grandchildren, during the period of youth and development when their strength and experience have not yet become capable of providing such sustenance and advantages. An investment is the placing of money in human enterprises which it is hoped will be profitable and will yield an annual return for an indefinite period, the property in which the principal is invested not losing in value, but rather gradually increasing. The losses of investment funds through the failure of the enterprises of man is a chapter in human history which can never be fully appreciated by any single person.

In selecting an investment the following questions should be taken into consideration:

1. What do the physical properties consist of?

2. Can you actually see the properties?

3. What is the financial position of the Company.

4. Do you know the character and reputation of the management?

5. Are the products or services supplied absolutely essential to the public.

6. What is the probable future demand for these products?

7. Are the earnings steady or do they fluctuate?

8. Can the business continue under the stress of adverse conditions? And what form of property has all of these qualifications more than the property in back of utility securities?

Therefore, following the thought set forth earlier in this discourse of considering the interests of the public and your customers first, every person in a commonwealth like Illinois should have a certain part of his surplus earnings invested in the great companies whose properties are all around him, which are managed by his friends, and which render to him what have become in our present day the most elemental services.

This also is a matter which should receive your earnest attention and support. Your customers and neighbors do not all know of these possibilities of investing money profitably, although in your business they may know it more than they do in mine, as the Independent Telephone people for years have been particularly far-sighted in this matter of getting their local people interested with them in their enterprises, but still the matter may go very much farther, and it is part of your duties to enlighten those around you on this feature of your business.

The speaker in his own industry has this year been honored by being placed at the head of a national committee on

the sale of stock to customers. The work of this committee is not only to gather information as to the amount of securities which, in the electric light and power business, have altogether been sold on this basis, and the plans and methods which have been used, but also to inspire those who have not taken up this work to do so, and to do their share of it, for the general good of the industry, and also to encourage those who have done work of this kind to greater efforts, and with your permission I wish to urge at this Convention that you make an effort to have every Independent Telephone Company in Illinois, from the largest to the smallest, do a certain amount of this work. It may be that the financial structure of many of your companies is such that you do not at the moment see just what you can issue and sell, but you should give more than superficial attention to the matter.

The tendency in the utility business in the past has been to finance altogether too much by bonds and other forms of securities with definite maturing features in them, which we generally term senior securities. It is very much to your interests and to the interests of the business that a larger percentage of the money be furnished as a result of selling junior securities, that is, stocks of various kinds, thereby bringing your security holders in as partners, and not as loaners of money. The very great psychological advantage of having a tremendous number of utility security holders in the state cannot be overestimated. Careful estimates at the present time indicate that there are at least 500,000 holders of utility securities in the state of Illinois, who, with their families, constitute almost one-third of the population. This, while a very good showing, is not enough, and we should not be satisfied until sixty to eighty per cent of all the families in the state have within the family circle at least one member who is a security holder of the utilities.

There is one thing in all of this work which I would particularly impress upon you, and that is that the greatest care should be used in the selection of these securities for sale to your customers, to the end that under no ordinary human circumstances will the securities thus sold ever fail to pay dividends or interest at regular periods. To sell securities of any kind which have not value behind them and which are not earning and paying a return would be fatal to the interests of you and your companies, and would have a result diametrically opposite to the one we are hoping to attain.

In closing let me thank you for your courtesy, and let me again urge you this year to take up both of these matters upon which I have dwelt particularly, and see to it that at least in the territory under your supervision all of the utilities will this year make progress in the favorable estimation of your local people, as well as in the number of utility security holders with which the district is favored.

The crying need of the country at this time is co-operation and understanding of the problems of industry on the part of the people. Misdirected government regulation and interference with business contrary to economic laws has contributed to the dislocation of industry throughout the country, and it cannot again operate smoothly until the people have a clearer understanding of the problems and their right solution. Industry is out of step, to use an electrical term, and all of the inexhorable economic forces of the country must be brought in parallel operation again to bring back prosperity and work for all who want it.—H. M. ATKINSON.

All-Gas Kitchens in Hotels and Clubs of the National Capital

D. D. RANSDELL, Washington, D. C.

THE **New Willard Hotel** is more than a Washington hotel. It is in a sense a national institution, well known to gas men, for it has been the scene of largely-attended conventions, held both by the American Gas Institute and the National Commercial Gas Association, and by other older associations in days gone by.

Its walls have sheltered many of the most famous men in the United States, men prominent in all walks of business life and famous in the political affairs of the country.

Several years have intervened between the time the proposition of installing an all-gas kitchen was first laid before the management of the New Willard and their final conversion.

The all-gas kitchen at the New Willard now consists of twelve sections of Garland Ranges, three Garland broilers, two Garland salamanders, and one oven, 14′ x 16′, converted from coal to artificial coal with Weiderwax burners. This installation was made in August of this year and the first complete month's consumption was 502 M.

The Washington Hotel, the newest of the city's large hotels also has an all-gas kitchen. The order for this installation was closed after careful consideration and deliberation by the management.

This installation now consists of twenty-two sections of Garland ranges, three reel ovens, and other equipment. The consumption of this installation averages about 458 M. per month.

The Powhatan Hotel, another of Washington's prominent hotels also has an all gas kitchen. This hotel is using its second all-gas installation, the first one having worn out, and its monthly consumption averages about 250 M.

The Congress Hall Hotel, like the Powhatan, is using its second installation of all gas equipment in its kitchen, the first one having served its time. The management of this hotel wrote the Washington Gas Light Company a very fine testimonial letter after the first equipment had been in use for several years. The consumption of this hotel averages about 115 M. per month.

The Metropolitan Club and the **University Club,** two large and prominent clubs, are both using all gas kitchens, the Metropolitan Club averaging about 180 M per month, and the University Club about 185 M per month.

The Washington Company's campaign work in this line is carried on through an Industrial representative, Mr. Harry B. Kerr, who devotes his entire time to the sale of large appliances.

His conversion of the Metropolitan Club from the use of coal to gas in its kitchens is an example of what may sometimes be accomplished by persistency. After making several calls upon the Manager of the Club, and failing to secure an audience, he adopted a practice of making the club his first call each morning, feeling that if he tried long enough, he would finally achieve his purpose. After about the tenth con-

secutive call, the Manager, apparently deciding to put an end to the matter, granted him an interview, telling him point blank that he was not interested in the use of gas in the kitchen and would not consider the discontinuance of the use of coal. Mr. Kerr, however, succeeded in interesting him and at the next meeting of the Board of Governors, it was decided to convert the kitchen from coal to gas equipment.

1922 Meetings of Wisconsin and Illinois Gas Associations

THE Wisconsin Gas Association and the Wisconsin Electrical Association, as has been their custom in the past, will again meet jointly at their next annual Convention to be held at the Hotel Pfister, Milwaukee, March 22, 23, and 24.

All of the first day and the morning of the second day will de devoted to business of the Gas Association only, the afternoon of the second day being devoted to subjects of interest to both gas and electric companies.

The program has not yet been prepared but will be announced to our membership as soon as available.

The Illinois Gas Association will hold its Annual Convention in Chicago on March 15 and 16. This will be a joint convention with the Illinois State Electric Association and the Illinois Electric Railways Association. It is planned to have the convention program of the Illinois Gas Association made up of one paper from each of the affiliation representatives in the five sections of the American Gas Association, that paper to be on the subject of greatest interest to the particular section. These five papers, together with a general paper and a banquet on Wednesday night, March 15, will constitute an interesting and valuable program for the gas side of the meeting. Illinois has set a high standard in the past and the indications are that the March meeting will be even more successful than those which have gone before.

MANY of us belong to that school of thought which is hesitant about altering the fundamental law.

"I think our tax problems, the tendency of wealth to seek non-taxable investment, and the menacing increase of public debt, Federal, State and municipal, all justify a proposal to change the Constitution so as to end the issue of non-taxable bonds. No action can change the status of many billions outstanding, but we can guard against future encouragement of capital's paralysis, while a halt in the growth of public indebtedness, would be beneficial throughout our whole land.

"Such a change in the Constitution must be very thoroughly considered before submission. There ought to be known what influence it will have on the inevitable refunding of our vast national debt, how it will operate on the necessary refunding of State and municipal debt, how the advantages of nation over State and municipality, or the contrary, may be avoided. Clearly, the States would not ratify to their own apparent disadvantage. I suggest the consideration because the drift of wealth into non-taxable securities is hindering the flow of large capital to our industries, manufacturing, agricultural and carrying, until we are discouraging the very activities which make our wealth."

—President Harding in his message to the Sixty-seventh Congress

Members Since the First of October

GAS COMPANIES

Peoples Gas Company,	J. H. Viereg, Mgr.	Marshfield, Wis.
Indiana Fuel & Light Company,	E. G. Jones, Mgr.	Auburn, Ind.
Washington Gas Light Company,	H. S. Reeside, Pres.	Washington, D. C.
Petoskey & Bay Shore Gas Co.	Norman W. Wells, Sec. Treas.	Petoskey, Mich.

MANUFACTURERS

P. H. & F. M. Roots Company	E. D. Johnston, Pres.	Connersville, Ind.
The Bristol Company	H. L. Griggs, Gen. Sales Mgr.	Waterbury, Conn.
Crown Stove Works	J. C. Rogers, Treas.	Chicago, Ill.
Belgian-American Coke Ovens Corp.	H. Prud'homme, V. Pres.	St. Louis, Mo.
Creech Coal Company	J. A. Emslie, No. Sales Mgr.	Cincinnati, Ohio
Cleveland Co-Operative Stove Co.	James Mitchell, Gen. Mgr.	Cleveland, Ohio
The 1900 Washer Company	H. L. Barker, V. Pres.	Binghamton, N. Y.
Mine Safety Appliances Company	Geo. H. Deike, Pres.	Pittsburgh, Pa.
Wheeling Corrugating Company (Stove Dept.)	A. E. Willert, Sales Mgr.	Wheeling, W. Va.
American Range & Foundry Company	E. A. Campbell, Secy.	Minneapolis, Minn.
Metcalfe-Shaw Corporation	E. Wharton Shaw, Pres.	Brooklyn, N. Y.
Alpha-Lux Company, Inc.	Wm. E. Leuchtenberg, Treas.	New York, N. Y.

LIBRARY

Good Cheer

FROM the antipodes comes a message of optimism. Mr. R. C. Bishop of the Christchurch Gas Company of New Zealand has the "go ahead" spirit that in the face of obstacles only waxes stronger. In a recent letter he says,....

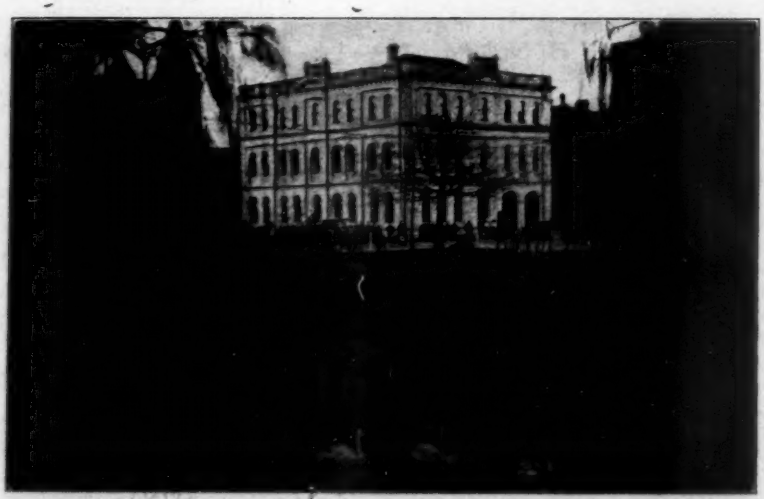
"In common with the rest of the world we are labouring under financial strain, over importation, with the resulting unemployment troubles..... Although things in our own industry are somewhat slack at the present moment, notwithstanding the general advanced cost of material and labour, many of the companies are erecting additional plants to meet the increased demands."

His company, Mr. Bishop writes, will shortly expend the equivalent of over $300,000.00 in new plant equipment.

...."It will all come right in time and we have no cause to complain..... It is just as well that we never are satisfied otherwise the incentive to further improve our respective businesses would be absent.

"I am always interested in your Bulletin and as I also take the American and Canadian Journals I keep myself pretty well posted in what is going on with you.

"With best wishes and Christmas Greetings from this small part of the world.....".



ACCOUNTING SECTION

EWALD HAASE, Chairman — J. W. HEINS, Vice-Chairman

H. W. HARTMAN, Secretary

Federal Income Tax as Applied to Gas Companies

H. W. FORBES: An Address before the Accounting Section Session

IT takes a good deal of presumption for a mere lawyer to address a gathering of accountants on a subject so peculiarly within their province as the income tax, and it is only due to the persuasive eloquence of my good friend Mr. Brundage that I consented to do it. In my struggles with income tax problems, I have found that lawyers and accountants often disagree both regarding what the law ought to be and what the law actually is. However, in this afternoon's discussion, I will try to avoid controversial questions, so far as possible.

First, a few words as to the history of the income tax.

For a brief period after the Civil War, there were Federal taxes on various kinds of income; but the first attempt to impose a general income tax was made in 1894. That Act was promptly held to be unconstitutional by the Supreme Court of the United States, and no further attempt was made to impose such a tax until 1909. In that year, an Act was passed imposing a tax of one per cent upon the net income of corporations; and an amendment to the Constitution permitting the imposition of general income taxes was proposed.

The tax on corporate income was in the nature of an experiment. It was not, strictly speaking, an income tax at all, but a franchise tax for the privilege of doing business, measured by the net income. The distinction was not only a technical one, but a real one, because a corporation might be enjoying a large income from rentals or otherwise and still not be subject to the tax if it were not actively engaged in business. There were also many arbitrary provisions regarding the computation of taxable income, the most important being the exemption from tax of dividends received from other taxable corporations and the limitation of the deduction for interest paid to the interest on an amount of indebtedness not exceeding the capital stock.

In February, 1913, the Constitutional Amendment permitting income taxes went into effect; and in October of that year the first general income tax statute was enacted. That statute continued the one per cent tax on the net income of corporations and also imposed a tax of one per cent on the net income of individuals, with graded surtaxes up to six per cent. Several changes were made in the method of computing the taxable income of corporations. Dividends received from other taxable corporations were made subject to the tax; and the limitation on the interest deduction was relaxed to the extent of allowing interest on the amount of the capital stock plus one-half the interest-bearing indebtedness.

One important effect of the change was to establish March 1, 1913, as the basic date for valuing property for the purpose of determining profits by its

subsequent sale, and for other purposes. Since the Constitutional Amendment did not become effective until February 25, 1913, Congress doubted its power to impose any tax on income accrued prior to that date. The tax on individual incomes accordingly dated from March 1, 1913; and the tax which corporations paid for that year was an excise tax for the first two months and an income tax for the last ten, the difference not being discernible on the corporate books. In the subsequent income tax statutes, both for individuals and corporations, the value of property on March 1, 1913, is recognized as capital. Depreciation is computed on the value of property on that date; and on the sale of property held on that date, only the excess received over the value of the property on March 1, 1913, is taxable. Similarly, the surplus of corporations accumulated prior to March 1, 1913, is not taxed when distributed to the stockholders in dividends. Bear in mind, however, that dividends are deemed to be paid from the most recent earnings, so that no dividend is considered paid from surplus accumulated prior to March 1, 1913, until all earnings after that date have been distributed.

While considering this subject, it should be noted that the application of the rule for valuing property as of March 1, 1913, has recently been modified by decisions of the Supreme Court, as most of you doubtless know. Those decisions were to the effect that where the actual profit made on a sale of property is less than the profit computed on the March 1, 1913, value, only the actual profit is taxable. It would logically follow that the same rule should be applied in the case of losses; and the Treasury Department is now applying it. The present rule is, in substance, that where property owned on March 1, 1913, is subsequently sold, you should compute the actual profit or loss, based on the cost price, and then the profit or loss based on the March 1, 1913, value. If one computation shows a profit and the other a loss, neither profit nor loss should be reported for income tax purposes. If both computations show profits, or both show losses, the smaller profit or the smaller loss should be used. The same rule is prescribed in the Revenue Bill now pending in Congress.

For example, suppose you bought stock or other property prior to March 1, 1913, for $100 and it was worth only $80 on March 1, 1913; if you should sell it for $90, you would have a profit over the March 1, 1913, value, but an actual loss on the transaction, so that you should report neither profit nor loss. If you should sell at $110, you would report $10 profit (and not $30, as was formerly claimed); and, conversely, if you sold it for $70, you could claim a loss of $10 only.

The taxes under the 1909 and 1913 Acts were comparatively small. Their collection was under the supervision of the Treasury Department, within the immediate province of the Bureau of Internal Revenue. The income tax was at first more or less of a side issue; and there was not much system in the administration of the law or the audit of returns. Those of you who had corporations' returns audited prior to 1916 know how different the examinations made in those days were from the searching investigations that have been made in recent years. Prior to 1917, practically the entire staff engaged at Wash-

ington on income tax work was housed in the Treasury building proper.

In 1916, the need for increased taxation owing to the war began to be felt; and the income tax was raised to two per cent, that is, doubled, and individual surtaxes were also increased to a maximum of thirteen per cent. The first excess profits tax Act, imposing a tax of eight per cent on earnings in excess of eight per cent on the invested capital, was passed in the spring of 1917; but that Act was superseded by the Revenue Act of 1917, passed in October of the same year. The latter Act trebled the income tax on corporations, by imposing an additional tax of four per cent in addition to the existing two per cent tax. It increased in similar manner the individual normal tax from two per cent to four per cent, and increased the surtax rates to a maximum of fifty per cent. It also imposed an excess profit tax on earnings in excess of from seven per cent to nine per cent on the invested capital, at rates running from twenty per cent to sixty per cent.

In February, 1919, the Revenue Act of 1918 was passed, applicable to the year 1918 and following years. That Act raised the income tax on corporations from six per cent to twelve per cent for the year 1918 and ten per cent for the following years and retained the excess profits tax, with an exemption of eight per cent, at rates of thirty per cent, sixty-five per cent and eighty per cent for the year 1918, and twenty per cent and forty per cent thereafter. It also raised the rates for individuals to four per cent and eight per cent normal tax and the individual surtaxes by increasing the gradations up to a maximum of sixty-five per cent.

The Revenue Act of 1918 made several fundamental changes in the method of computing the tax on corporations, among the more important of which were the following: The limitation on the amount of interest deductible was abolished; dividends received from other corporations subject to tax were exempted, thus reverting to the status prior to 1913; returns were required to be for the same fiscal year upon which the corporation's accounts were kept; and consolidated returns for affiliated corporations were required. Under the excess profits tax regulations for the year 1917, which were drafted by an independent Board called in to assist the Treasury Department, consolidated excess profits tax returns for 1917 had been required, although the 1917 Act was silent on the subject. Under the 1918 Act, consolidated returns both for excess profits tax and for income tax were specifically required.

The two latter Acts increased enormously the work of the Treasury Department. A system has gradually been built up for administering the tax, which now approaches at least the point of overspecialization. A separate Income Tax Unit has been formed, which occupies the newly constructed Treasury Annex No. 1, directly across the street from the Treasury Building, and Treasury Annex No. 2, at 14th and B Streets, a large temporary building put up for war purposes. Even these two buildings are not sufficient to house the force employed at Washington in the work.

Without attempting to discuss the system in detail, a corporation return filed in a local collector's office is listed and the tax shown thereon is recorded. It is then sent to Washington, where it is au-

dited. Various sections have been established for the different kinds of business, and there are still other sections to deal with special questions, among the most important of which at present is the Special Assessment Section, particularly the Consolidated Returns Subdivision. The returns of gas companies are taken up either by the Consolidated Returns Subdivision, or the "T P U," Transportation and Public Utilities Section, or both. In the course of time the taxpayer's books are examined and a field audit made by one or more Revenue Agents, whose report is sent to Washington and again audited there.

If, as is all too frequently the case, additional taxes are claimed as the result of either of these audits, the taxpayer receives a letter, called an "A-2," or second assessment letter, notifying it of the corrections made and the amount of the additional tax assessed, of which it will later receive notice and demand from the local collector. Under the present practice, which will be required under the new Revenue Bill, the assessment is not actually sent out to the local collector until thirty days after the A-2 letter, so as to give the taxpayer the opportunity to file objections and to have a personal hearing at Washington. Also, in case of a field audit, the Revenue Agents who examine the books are at present instructed to give the taxpayer a copy of the report sent to Washington. Opportunity is thus given to submit additional data directly to Washington for consideration when the Agent's report is audited.

If the taxpayer is unable to agree with the Income Tax Unit as to the correct amount of tax, an appeal may be taken to the Committee on Appeals and Review. Such appeal does not, however, stay the collection of the tax. The local collector, on receiving an assessment list, sends out a notice and demand, calling for payment of the tax within ten days. At the end of ten days, if the tax is not paid a penalty of five per cent is added, and interest commences to run. If the taxpayer wishes to defer payment, a claim of abatement may be filed, which will prevent the imposition of the five per cent penalty but will not prevent interest from running. The collector may require a bond for the payment of the tax to be given, where a claim of abatement is filed. If the taxpayer is unable to obtain satisfaction from either the Income Tax Unit or the Committee on Appeals and Review, the only remedy is to resort to the courts.

It is impossible within the time limits allowed for this discussion even to mention all the provisions of the law that have given rise to complicated questions affecting the accounting of gas companies. There are some points of general interest which may be mentioned.

In administering the law, some of the theories of accounting have been enforced to the limit. The ordinary corporation does not captalize its office furniture and fixtures. The additions and replacements which are made from time to time are usually trifling in amount and do not exceed a reasonable depreciation allowance. Nevertheless, the Treasury Department has been tireless in investigating and objecting to such charges, insisting that a capital account be set up and depreciated. The fact that depreciation starts with the value of the property on March 1, 1913, an arbitrary date, adds to the difficulty. To determine the value and the life of the prop-

erty on that date, and the life of the subsequent additions, and depreciate accordingly, which is the established Government method for determining the depreciation allowance, requires an inordinate amount of work, the results of which may or may not be accurate.

The same turmoil has prevailed regarding plant depreciation. Most public utility corporations know from experience almost exactly what percentage of income should be reserved for retirements and replacements, which is a far more accurate allowance that one determined by the theoretical method. The common practice among gas companies, is, I believe, to set aside a reserve for renewals and replacements and to have no depreciation reserve whatever, on the theory that the plant is at all times maintained at one hundred per cent operating efficiency and that there is no such thing as plant depreciation. The Department has informally recognized the one hundred per cent efficiency theory, to the extent of allowing the actual amounts expended for renewals and replacements to be deducted without requiring a depreciation reserve to be set up to take care of such items. So far as I know, however, there has been no official announcement sanctioning the one hundred per cent efficiency theory.

The recent statutes have provided that the net income shall be computed in accordance with the method of accounting regularly employed in keeping the books of the taxpayer, if that method clearly reflects the income. Whether the method reflects the income or not is a matter for the Commissioner to decide; and the tendency so far has been to keep all corporations closely within the general rules. Banks, for example, may be compelled to write down the value of certain assets by direction of national bank examiners representing a different branch of the same Treasury Department; yet they cannot show such reductions in their income tax returns under the ruling of the Income Tax Unit that no losses may be deducted until actually sustained as the result of closed transactions.

There is plenty of room here to simplify the work of both tax officials and corporations. In the case of banks, insurance companies, public service corporations, and other businesses where the accounts are kept under some sort of governmental supervision, it would be eminently desirable to have the income tax returns made up from the books and correspond with the official reports. As you all know, under the present system the income tax return of a large corporation cannot be reconciled with its published figures without an appalling amount of work.

It is quite possible that, with the excess profits tax repealed and a uniform rate of income tax in force year after year, the Treasury Department may be more liberal in the future. If the tax rate were the same, it would make little difference in the ultimate result whether a corporation made an annual charge for depreciation of office furniture, or deducted its actual expenditures in the years when they were incurred. Similarly, if a corporation has any net income, it will be immaterial whether a loss or bad debt is charged off in part in one year and in part in another, or whether it is all charged off in a single year. During the past few years, however, owing to the changes in the rates of income tax and the existence of the excess profits tax, the percentage of tax paid by a corporation on

its income might vary tremendously, so that the determination of the particular year in which certain deductions might be taken was of the utmost importance.

That brings us naturally to the subject of future taxation, on which I will say a few words in conclusion.

Of one thing we may be sure; and that is, that the income tax has come to stay. It is a popular tax, except with its victims, and with the heavy governmental expenses resulting from the war there is no prospect of a repeal of the tax, or even of any material reduction, for many years to come.

As you all know, a new revenue bill, to be known after enactment as the Revenue Act of 1921, is now before Congress. As passed by the House, this bill amended the income tax provisions in the present Act, the Revenue Act of 1918, in several particulars, among them authorizing the deduction of a reasonable reserve for bad debts. The excess profits tax and the corporation income tax were retained at their present rates for the current year, payable during 1922: Commencing next January, however, the excess profits tax was repealed, and the corporation income tax was raised to 12½ per cent.

The Senate Finance Committee, in presenting the bill to the Senate, drafted a complete Act to replace the Revenue Act of 1918. In their bill, the rate of corporation income tax was raised to 15 per cent instead of 12½ per cent. The provision permitting the deduction of a reserve for bad debts was omitted; but it has since been restored by amendment.

The bill was passed by the Senate late Monday night and will now go to a Conference Committee, consisting of representatives of both Houses who will draft a compromise measure which will no doubt be promptly passed by both Houses and become a law. Until the report of the Conference Committee is received, it is idle to speculate on the exact terms of the bill. Of the main provisions, however, we can be fairly certain namely, that taxes on the current year's income, payable next year, will be at the same rate, and computed in practically the same manner, as they have been for the last two years. After that, there will be no excess profits tax and the corporation income tax will be increased to 12½ per cent or 15 per cent, probably the latter.

After the people are awakened to the fact that the expenditure of vast sums of money is a vital necessity for the construction of a power system which has such resultant potential helpfulness to humanity, they will not permit the hampering or destroying of the efforts of the creator of such an enterprise. I mention this because I believe our people are liberal minded and want to do the right things. But the truth, the real undeniable facts, that comprise such a large proposition, should be laid clearly and aggressively before them. It's the one way to dispel the existing artificial prejudice created by destructionists.—MADISON BELL, in a letter to MR. H. M. ATKINSON.

ADVERTISING SECTION
CHARLES W. PERSON, Secretary
A. A. HIGGINS, Chairman B. J. MULLANEY, Vice-Chairman

Getting the Public Eye and Ear

LABERT ST. CLAIR, Director of the A. E. R. A. Advertising Section

Although written primarily for the street railway man, the several chapters from Mr. St. Clair's book which we reproduce with his permission, contain a wealth of practical information on public relations work which merits the careful study of every gas company official.

The Right Approach to Advertising

Advertising, or publicity, is an organized force for moulding or changing the minds and habits of people. What you really buy when you buy advertising is Mental Impressions. The repetition of favorable Mental Impressions is the irresistible power that builds Good Will.

The question no longer is "Does Advertising Pay?" but "How much can I make it pay?"

One way to make advertising pay the most is to employ a trained advertising or publicity man to take charge of your advertising and public relations work.

If your company cannot afford to employ a man for his full time, get a part-time man. Frequently it is possible to employ someone connected with a local newspaper—an editor or a reporter —to do the work on a part-time basis.

And when you get an advertising man, make him more than a mere explainer of policies long after they are formulated, or actually put into effect. Advise with him as to public reactions. Tell him in advance what you have in mind and ask him how the newspapers and the public will take it.

Tell Your Story Simply

If he is worth having, he will be able to give you the newspaper attitude, and also give you a fair idea of the probable public reaction. Furthermore, by advising him fully of your plans as formulated, you will aid him greatly in preparing the way for execution of any policy you have in mind.

If your advertising appropriation will not justify your employing an advertising man, however, do not despair of being able to derive some of the benefits of advertising. One of the most successful writers of electric railway advertising in the United States today is the general manager of a company in Pennsylvania who never wrote an ad in his life until a few years ago. Then he hit upon the very wise policy of telling his story just as simply and as straight from the shoulder as he could, and the results of his work have been extremely gratifying to his company.

The outstanding element in the preparation of any advertisnig is our good old friend, Common Sense.

Because, the most part of writing an advertisement is the part that comes be-

fore a single word is written. In other words, a full understanding of conditions, a decision on policy, a logical objective.

If you are on the right basis, there may be two or three good ways to present, in words, that basis to the public. Any one of these, if it rings true, will be vastly more effective than the most finished "copy" and perfect English on the wrong basis.

Write as You Talk

The easiest and best way to prepare advertising copy, is to write your story just as you would tell it if you had your friend Bill Jones across the table from you and were trying to sell him the proposition which you want to sell the general public. Once you have gotten Bill Jones facing you, theoretically, and have begun to prepare your proposition for the public in the same, clear, simple, honest fashion that you would present it to Bill, you are on the way to success.

After that your chief problem will be to select the best mediums through which to present your message to the public.

Indicate to the advertising solicitor or the printer with whom you do business that you welcome suggestions and advice on the preparation of your material and you will find that he can be of a great deal of help to you. It is his business to know how to effect the best possible typographical display of your message.

Base your advertising plea on service to the car rider.

Don't weep.

Don't try to excite pity for your company.

Sell your goods on merit.

Above all, build on and with facts. From start to finish, hammer home the truth. If your opponent lies about you, don't say he lies; show by facts that he lies.

Don't get huffy and explode.

You can't lay bricks and throw mud at the same time.

If the truth is on your side, you will win in the end, but you wouldn't hasten the end by any method but that of giving facts.

And don't merely buy advertising; invest in advertising, because advertising corectly used pays big dividends in Good Will.

Starting to Advertise

Advertising is not a magic wand to be successfully wielded by whomever may buy it.

Rather it is a hoe with which one may till the soil of public sentiment.

What the crop will be depends on the kind of seed one sows and the care and intensity with which he hoes.

Seeds of empty promises, sprung from years of poor service and general indifference, never will produce bountiful crops.

Nor will the fault lie with the hoe.

But when the seed is good the hoe will help. The soil—the public—usually may be depended upon to produce, though it may have become temporarily weak through neglect or abuse.

Unusual Channels for Distribution

The electric railway possesses unusual natural channels for the distribution of advertising. Possibly no other industry is so fortunate. Every company's employees are constantly moving among the persons whose good will it desires to obtain. It often has a large number of security holders who are among the best citizens of the community from which a

company draws its business. Business men are dependent very largely upon it to bring people to their stores and should be electric railway supporters. The social, business and educational organizations through which it can disseminate its message are many and varied. Finally, it always has a local press whose advertising columns are open to it and whose owners, by the very nature of their desire to see the community advance, usually are susceptible to friendly approach.

To the company that is prepared to use advertising, therefore, the field offers a great opportunity.

The company that is giving the best possible service within its limitations, that is frank, fair and cordial with the public and its employees and is willing to court legitimate inquiry into its operation is prepared to advertise.

Companies that do not measure up to these standards had best leave advertising alone. To them it probably will prove both unprofitable and annoying.

Analyze Your Service

The initial step for any company to take before attempting advertising is to analyze its service and determine whether it is giving the best service that it can under existing conditions. This does not mean service equal to that of any other company regardless of financial conditions. It means the best possible service under the circumstances. If the facts in the situation prove that the company's condition permits it to run only one car an hour on that service the company need not fear to begin advertising.

The general public seldom will demand better service than that to which it is entitled if it knows the facts.

Having disposed of the question of service, the management should subject itself and the entire company personnel to close scrutiny in regard to its attitude toward the public.

No employee can be expected to assume an attitude toward the public which is better than the attitude of the chief executive of the company. It therefore behooves the management to ask itself these questions:

Am I courteous toward and accessible to the public and my employees?

Do I really hear what the public is thinking about my management, or am I simply being told the things I like to hear?

Am I and all of my employees making the most of every opportunity to create good will surplus, or are we just "getting by?"

Until these questions can be answered in the affirmative, without mental or other reservation, it is virtually useless for any management to enter upon printed advertising.

A company may advertise until the cows come home, emphasizing its desire to serve, but if this friendly and cordial attitude is not reflected in the actions and voices of the organization from the manager down to the lowest paid employee, its advertising can not net maximum returns.

Nothing illustrates better the need for frank, open dealing by electric railway managements than the success demagogues have achieved in assailing the heads of public service corporations.

For years executives have been pictured by demagogues as corpulent tyrants possessed of hoofs and horns who sit behind closed doors and frosted glass and figure only on how they can mulct the public out of a few more pennies. The all too general attitude of electric

railway managements has been to ignore these attacks and depend upon the good sense and fairness of the public to recognize their falsity.

This attitude of silence on the part of managements, this failure to combat the ungrounded vaporings of their foes, is in a great measure responsible for the picture that so many communities have today of electric railway managements.

The fact is demagogues have out-advertised many managements.

Meet the Public

Suppose that when these attacks started every electric railway manager had moved his office to the ground floor of some downtown building, done away with frosted glass partitions, appeared as a speaker at public gatherings, and made it known generally that he was open at all times to meet the public in his office or elsewhere in the open and discuss local transportation problems. Is it not reasonable to presume that in a very short time his foes would have been stripped of one of their most valuable weapons, the mystery surrounding the management?

It is not suggested, of course, that electric railway managements should adopt as a part of their advertising programs a policy of coarse flattery toward the public, but it would be of benefit to the industry generally if they at least would follow the present-day policies of leading bankers in moving their desks out into the open where they may be seen by the public.

One of the most successful electric railway managers in the United States uses as a part of his public relations policy a standing invitation to the public to call him on the telephone at his office or at his residence whenever it desires to discuss any electric railway problem or obtain any information regarding his company. So thoroughly has he inculcated the idea that he desires to cooperate with the public into his riders' minds that every day he receives many phone calls from persons who regard themselves as partly responsible for the successful operation of his lines. They tell him of incidents which have occurred on the lines that will or will not accrue to the benefit of his company. Thus he frequently receives tips that are invaluable to him.

Another feature of this executive's publicity policy is that he answers personally and by special delivery letter every complaint on the day it is received.

Good Will Capitalized

A concrete example of what this policy means to him was shown recently when in the midst of heated opposition to him in a public meeting a man who recently had received a reply to a complaint arose and declared that a manager who took as much interest in answering complaints as did this man deserved the confidence of the public. He then related the story of his letter and its reply, and soon he turned the tide of the meeting to such an extent that it passed a strong resolution indorsing the company policy.

Not only should executives be accessible at all times in their own offices to the public and their own employees, but they should at every opportunity show that they are willing and ready to discuss on the outside any phase of electric railway policies that the public may see fit to inquire about.

The day when the public utility manager could refuse to tell the public about his business and still hope to retain the general good will is past—if, indeed, it ever existed.

Therefore it is well in entering upon advertising to be prepared to answer any question about your business that the public may ask.

Furthermore, it is decidedly to your advantage to invite the laity to ask questions and promise it to answer them. Just as soon as you start to advertise the questions will come in anyhow and you might as well have the advantage of having invited inquiry. Answers to these inquiries must be just as frank and full as your promise to answer them indicated they would be. Better by far make no answer to an inquiry than to answer it in part or evasively.

Dealing With Newspapers

Every electric railway company should have the support of its local newspapers, and fortunately, in most situations the support of the constructive element of the press is available when it is made to understand thoroughly the problems of the management.

This does not mean that the support of every local newspaper can be obtained by an electric railway company. It is a fact that some very powerful and influential newspapers are conducted on a fixed policy of opposition to certain public utilities and that it is hopeless to try to enlist their aid.

It is often the case, however, that newspapers, through lack of understanding, or indifference, drift into a state of opposition to public utility companies, and if this condition is permitted to continue the opposition is certain to grow. The point upon which every electric railway management should assure itself is that any opposition shown to it by its local press is not due to the failure of the management to remedy a situation which might be cured by sustained and intensive effort at better understanding.

"Be frank and advertise" was a policy laid down as a means of obtaining an understanding of public utility problems by Phillip H. Gadsden soon after he was elected President of the American Electric Railway Association. It is difficult to improve on that advice in recommending a way to get along with the newspapers.

It is possible, of course, to succeed in getting public support without using newspaper advertising or having editorial help. This because of the splendid advertising value of street car space and other company channels. Proof of this statement is found in a case where one of the largest companies in the United States won a skip-stop campaign through the use of car signs when every paper in the city was opposing skip-stops. Nevertheless, it is decidedly helpful to have newspaper support.

Most newspapers want to be fair. They desire, for business reasons if no other, to support every industry that will make their cities prosper. Therefore, the job of every electric railway operator is to make his newspapers realize two things: That transportation is a necessity just as food, clothing and shelter and that his efforts are to give service that will help to build up the community. When newspapers that are honestly striving to do the best thing for their comunities recognize these two points they usually will support their local managements.

Save in rare cases, newspaper support can not be obtained by buying advertising space. Ten or twenty years ago this might have been done, but times have changed. In fact, one of the quickest

ways of getting newspaper enmity these days is to try to buy display advertising space with an understanding that editorial support is to be included.

A good impression may be created, however, by letting the newspapers know, through the making of display advertising contract, that your company is willing to pay for legitimate advertising. Few persons are disliked more around newspaper offices than the man who seeks to have advertising that obviously belongs in display space slipped into the news column free of charge.

Editors May Not Agree With You

On the other hand, the editorial department of every newspaper wants real news just as bad as the advertising department wants ads. If you have news, most papers will print it. Editors sometimes may not agree with you as to what is news, but that should be no cause for discouragement. The average newspaper throws away about five times as much information that somebody regards as news as it prints every day.

Go into newspaper campaigns with confidence and determination to get results. The man who buys newspaper advertising space merely as a charitable proposition, or receives reporters as necessary evils, had best keep his money in his pocket and lock his doors to newspaper men. If there is one kind of campaigning for good will that requires genuine interest and zeal to win on the part of its backer, it is the newspaper variety.

The best initial step in a newspaper campaign is to call in the advertising manager and make a contract for advertising for a period of several months. Talk freely with him about your problem and ask his advice. He will be helpful in many ways.

Make your ads so interesting that the news department will know that you are advertising. It will not be long, in all likelihood, until editors or executives around the papers will display interest. Then you will be in a position to explain your problems. Even if no interest is shown, you, as an advertiser, will have the right to suggest a conference on your situation. And it's a rare conference of this kind which does not result in better understanding all around.

Let your talk at this conference be full and free. Do not try to cover the ground in half an hour or an hour. Get all of the newspaper man's time that he can give you. Put him in full possession of the facts, and tell him honestly that you want his help.

Explain But Don't Complain

The many intricate problems of the industry, especially in these days of rehabilitation, are difficult for any layman to understand, and it is no wonder that misstatements regarding them appear in the press. Make it clear to the newspaper man that you appreciate this. Explain, but don't complain. Complaining is not the way to get a square deal around newspaper offices. A kicker often gets a kick. A smiler usually gets a friendly reception.

If possible, make arrangements with the city editors of your local papers to assign one particular reporter to obtain all the news arising from your property. Thus the reporter, through frequent contact with electric railway happenings, will be able to grasp intelligently the subject with which he is dealing.

Once cordial relations are established, you should make every effort to see that the papers get all your news quickly and accurately.

In order that no mistakes may arise from misunderstanding you, it is well, if you have a hostile or indifferent press, to issue in typewritten form all statements which you desire published. Then if any question arises as to the accuracy the blame will be easily placed either in your own office or in that of the newspaper.

Every effort should be made, particularly in the case of accidents to see that the newspaper gets the facts in the situation as quickly as possible.

If you have nothing more to say than that you are investigating and will give all the facts just as soon as they are in hand, say that. And make good. Don't wait for days after the story is dead and then give out a statement. The chances are it will not be published, and, furthermore, you will have offended your newspaper friends.

Be absolutely frank with the newspapers at all times. This may be hard to do, especially in accident cases, but it will pay big returns in the long run. It is better to tell the truth in a bad situation and depend on the newspaper's sense of fair play to give you a square deal than it is either to ignore the truth or say nothing.

The electric railway executive who persistently refuses to discuss company business with newspaper men or contents himself with the statement that "the company has nothing to say," can expect nothing but bad treatment from newspapers.

Be Frank At All Times

It may be unpleasant at times to talk to reporters who may seem not to understand the electric railway problem or to give proper consideration to certain angles of situations which appeal strongly to the electric railway management, but it is well to remember that no matter how young or inexperienced a reporter may be, he represents the paper for which he works and the editor who sends him out on a story has faith enough in him to take his report for the truth when he returns to his office. Play fairly and squarely with reporters. No class of men on earth is quicker to respond to considerate or cordial treatment.

In passing, merely because a newspaper does not see fit to give your company a square deal in its news columns is no reason why its advertising columns should not be utilized by you. Buying newspaper advertising space is an investment and not a charity, and, hence, when one is attempting to sell a proposition through the use of advertising space he no more should refuse to use a certain newspaper because he does not like the policy or personality of its owner than he should refuse to handle a certain brand of goods on which he could make a profit merely because he does not like the personality or policy of its manufacturer.

Make Your Space Valuable

Most newspaper space is worth all the money that it costs and if the advertisement that fills the space does not bring results the fault more often is that of the text matter than of the medium itself.

Endeavor to have your company represented in the advertising columns every day or at least several times a week. It is not necessary to use a full page, a half page, or even a quarter of a page, to tell one's story. But it is essential to keep the name of the company

and some interesting fact about it before the reading public constantly.

Courting the public through advertising is very similar to courting a girl. The fellow who shows up every day or frequently, and thus proves his interest, is more likely to be favorably received than the one who appears only once or twice a year, and then disappears for another extended period.

The very widespread belief that an electric railway has nothing to say about itself in the paid advertising columns of a newspaper except when it has a change of fare or a change of schedule to announce is highly fallacious. Scores of things happen on every line every day that can be made interesting to the car rider if presented in a chatty, friendly way. One way to build up good will is to bring a company's little problems, or little pleasures, for that matter, to the attention of the riding public. Then when the time comes to raise a fare or to inaugurate some other market departure the public is more likely to receive the announcement in a friendly spirit.

There is no occasion for consternation over the fact that the management that advertises in the newspapers only when it finds it necessary to get more revenue from the public meets with a none too cordial reception.

Every season of the year, every holiday, almost every current event, offers some text that can be applied to electric railway newspaper advertising.

If there is a snow fall and you succeed in clearing the tracks in a short time, tell the public about it. Give the details. If, on a hot summer day, the temperature in your cars is 20 degrees cooler than the temperature on the street, say so in an advertisement. When Thanksgiving comes around tell the the public why you are giving thanks and why it should be—coupling your arguments all the time, of course, with good car service. Should a circus come to town and you should handle the crowds exceptionally well, tell the folks your story, giving the facts and figures.

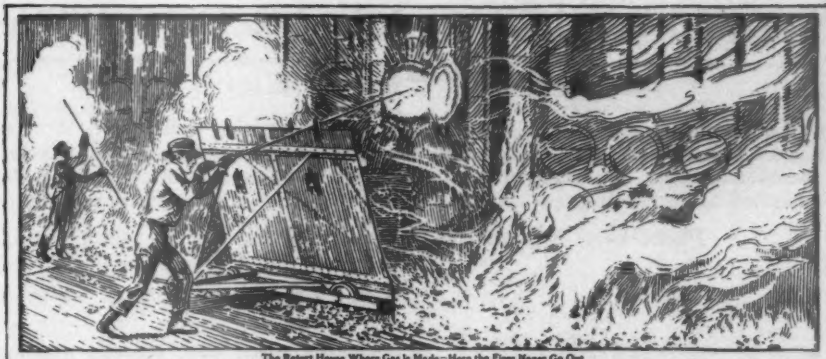
Every day someone says something on your cars or writes you a letter about the service which would make good reading in an advertisement and adds just another stone to the strong foundation of good will that you must build up if your property is to go forward to the success which it should enjoy.

You do not need a large appropriation for continuous advertising. Each of the foregoing suggested ads could be covered in a space of five inches in a single column, and certainly five inches of space a day would not mean much of a financial outlay in the course of a year. Of course, when you are making a special drive you must use more space.

Do not depend wholly on your newspapers to distribute your advertisements. See that copies of them get to the eyes of your employees, by bulletin board or otherwise; to your city officials and to your own executives. Frame them and set them around in prominent places.

Probably the most wasteful expenditure of money in the advertising field is that for space in programs, souvenir booklets, special editions and publications without bona fide subscription lists. Beware of all of them.

Labor is subject to inexorable economic forces, capital is governed by the same, and government regulation and interference must square with those same forces. This fact must be recognized by the people, and all three elements, labor, capital and government, brought into a state of co-operation and travel side by side in parallel operation, not in conflict, in order to bring a return of general prosperity.—H. M. ATKINSON.



The Retort House Where Gas Is Made—Here the Fires Never Go Out

Do You Know That—

While the banks close for a holiday.

While the stores shut up shop for Sunday.

While the grocer says "we have some ordered."

While the coal man tells you to wait a while.

While the merchant moves on to another town.

While labor in other industries is on strike.

While the manufacturer goes out of business.

While the butcher makes you take something else.

While the farmer says "I'll sell when prices go up."

Your gas company keeps right on serving the public, rich and poor alike, 365¼ days, 8,766 hours a year.

This is real, genuine service.

(Insert the name of your Company here)

MEMBER OF THE AMERICAN GAS ASSOCIATION

Good Will Advertisement Number 21

Newspaper Publishers Asked to Give Utilities a Square Deal

THE following letter by F. W. Ayer of the advertising firm of N. W. Ayer and Sons, Philadelphia, Pa., appeared on the editorial page of the Peoria Star, November 3, 1921. Mr. Ayer informs the Association that his letter was widely distributed among newspaper publishers and has been quite generally reproduced.

Philadelphia, Nov. 1, 1921.

Mr. S. A. Oakley,
Daily Star, Peoria, Ill.

My dear Sir:—

It is a notorious fact that the innocent bystander often receives the brick or the bullet. By the same token, a good business is not infrequently condemned because of past offenses in other businesses.

I was forcibly reminded of this quite recently when reading a statement by the Hon. James A. Perry, president, National Association of Railway and Utilities Commissioners, appearing in "Public Utilities Reports." Before quoting Mr. Perry's remarks, will you pardon a word or two on my own account concerning public service corporations?

Mr. Perry is chief of all public service commissioners. We usually think these gentlemen decidedly guarded in their praise of the utilities which come before them for careful examination. Yet Mr. Perry is very frank in expressing his appreciation of the services public service organizations render the mass of the people. Is it not possible that many good citizens—and editors, too—have frequently erred in their apparent disposition to "swat the public service" no matter what the occasion?

Also it occurs to me that living would be much less comfortable for any of us, if all the gas, water, electricity, railroad, telephone, telegraph, street railway, and other public utilities should some fine day go out of business. This being the case it must be that we are receiving valuable service from these corporations. Just how valuable the majority of us do not know how to estimate, nor are we in position accurately to determine what such service should cost.

Again, is it not true that most of us do better work when those for whom we work show some appreciation? As our public utilities are operated by "people" with feelings quite like the rest of us, it might be that we could get the best they have to offer if we stopped complaining for a while and did a little praising. What do you think?

Here are the statements by Mr. Perry which impressed me:

The public is not entirely at fault for accepting, as true, reckless and untruthful statements of irresponsible individuals concerning the affairs of public utilities. At times we see newspapers playing up such statements, regardless of the facts or source from which they come. Such a campaign of misrepresentation should never be allowed to go unchallenged. The public should be given the facts and in most instances they will be readily accepted.

Frankly, I know of no greater curse to the business interests of a community than where agitators, by whatever name you call them, some running for one of-

(Continued on page 50)

Signs in the Air

THOSE who were fortunate enough to attend the November Convention in Chicago had the privilege of hearing a straight from the shoulder talk by Mr. Charles Coolidge Parlin of the Curtis Publishing Company on his impressions of the gas business.

Mr. Parlin's impressions are based on first-hand information and observation and what he had to say concerning our merchandising methods was what many of us have long suspected, namely, that this is the weakest link in the chain.

We know, as Mr. Parlin stated, that there are a number of companies whose merchandising methods compare favorably with those employed by other high grade merchants, but taking it by and large this phase of the gas company's operations is by no means a credit to an industry as important as ours.

It is now very generally recognized that the personnel of the sales department is the most important and closest contact the company has with its public. If our sales methods are on a parity with those of other up-to-date merchandisers in the community there is then established the channel for building up good will and large sales, not only of appliances but of gas—the main product.

The foundation of substantial business is *good service* and if we fail there, no amount of intensive sales effort or publicity will overcome the lack of it.

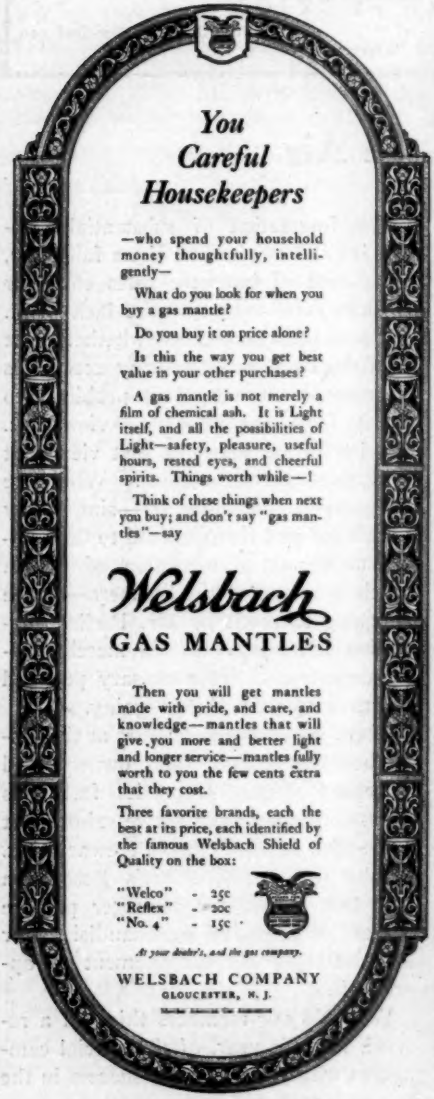
We wonder sometimes whether most sales managers and company executives are not too close to their problems to see it from the outsider's viewpoint. Mr. Parlin has given us that viewpoint in a constructive manner. What are we going to do about it?—simply say "that's so" and then proceed to do nothing to correct a condition of inertia which is retarding the business—or are we going to profit by Mr. Parlins suggestion and inject into our merchandising departments the necessary pep and incentive to start things going.

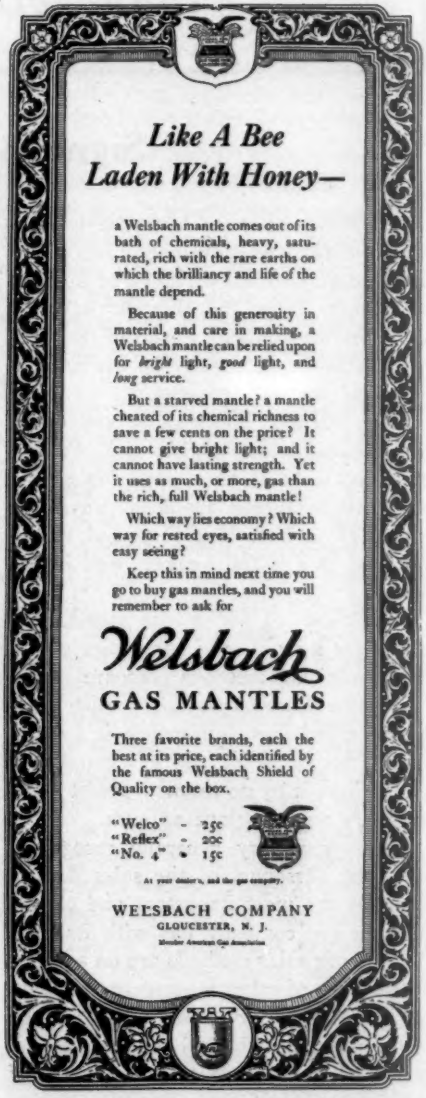
There was every indication at the November Convention that owners and managers of gas properties feel it is about time to resume active sales effort again with some of the old prewar spirit.

Why not a New Year's Resolution *now* that each Sales Manager prepare a plan of intensive merchandising for 1922 and get his management to approve it.

What do our members think of a revival, for this year, of the special campaigns which were such a success in the N. C. G. A. days?

Welsbach Advertising


You
Careful
Housekeepers
—who spend your household money thoughtfully, intelligently—
What do you look for when you buy a gas mantle?
Do you buy it on price alone?
Is this the way you get best value in your other purchases?
A gas mantle is not merely a film of chemical ash. It is Light itself, and all the possibilities of Light—safety, pleasure, useful hours, rested eyes, and cheerful spirits. Things worth while—!
Think of these things when next you buy; and don't say "gas mantles"—say
Welsbach
GAS MANTLES
Then you will get mantles made with pride, and care, and knowledge—mantles that will give you more and better light and longer service—mantles fully worth to you the few cents extra that they cost.
Three favorite brands, each the best at its price, each identified by the famous Welsbach Shield of Quality on the box:
"Welco" - 25c
"Reflex" - 20c
"No. 4" - 15c
At your dealer's, and the gas company.
WELSBACH COMPANY
GLOUCESTER, N. J.


Like A Bee
Laden With Honey—
a Welsbach mantle comes out of its bath of chemicals, heavy, saturated, rich with the rare earths on which the brilliancy and life of the mantle depend.
Because of this generosity in material, and care in making, a Welsbach mantle can be relied upon for bright light, good light, and long service.
But a starved mantle? a mantle cheated of its chemical richness to save a few cents on the price? It cannot give bright light; and it cannot have lasting strength. Yet it uses as much, or more, gas than the rich, full Welsbach mantle!
Which way lies economy? Which way for rested eyes, satisfied with easy seeing?
Keep this in mind next time you go to buy gas mantles, and you will remember to ask for
Welsbach
GAS MANTLES
Three favorite brands, each the best at its price, each identified by the famous Welsbach Shield of Quality on the box.
"Welco" - 25c
"Reflex" - 20c
"No. 4" - 15c
At your dealer's, and the gas company.
WELSBACH COMPANY
GLOUCESTER, N. J.

Above are samples of some effective national advertising done by the Welsbach Company. The advertisements reproduced above have all appeared in half page size in the Saturday Evening Post and have caused favorable comment everywhere.

Welsbach Advertising

What Is Your Home Lighting Doing For You?

This is what it should do:

Above all else, it should please your eyes, make seeing easy, and temper the eye-strain and weariness of the day.

It should bring cheer, and color, and beauty into your home, irradiating dim corners, and softly subduing glare.

It should combine this luxury of good light with a thrifty and real economy in lighting bills.

If it is not doing these things, then the question should be put differently: "What are you doing for your home lighting?".

The first step in making over the lighting of a home is to know that Modern Gas Lighting, through the medium of Welsbach Lights and Welsbach Mantles, gives this ideal illumination.

The second step is to realize that not all mantles are Welsbach mantles; and that only the genuine Welsbach will give the fullness of satisfaction you are entitled to expect.

In the making of mantles, there are seventeen processes—seventeen ways in which they can be perfected, or "skimped." Because of the care, and the conscience, back of every step in the Welsbach factory, the Welsbach mantles in *your* home will

burn brightest, last longest, and use least gas

This Shield of Quality on every box is your guarantee that you are getting the genuine Welsbach. Ask your dealer or the gas company.

WELSBACH COMPANY, Gloucester, N. J.
Manufacturers of

Welsbach

GAS MANTLES

This New Light
What Is It?
A tiny glow that guides you to it through the dark—a gentle pull on a slender chain—a sudden, bursting fountain of LIGHT, that reaches upward from its graceful bowl and pours downward, and spreads itself everywhere in radiant diffusion!
The room blooms into beauty beneath its soft influence; taut nerves relax; eyes brighten as they are eased and comforted.
What kind of lighting is this? It is your old friend, Gas Light, in its most modern form: semi-indirect lighting in a
Welsbach
Gas Bowl
Did you know Gas Lighting could be so delightful? Do you know a room, at present dreary after nightfall, where you'd like this Welsbach Gas Bowl to work its transforming magic?
Gas lighting fixtures made by the Welsbach Company conform to the highest standards of art and fashion; bringing into the home beauty and taste, as well as the peculiar pleasure that comes from perfect lighting.
YOUR GAS COMPANY
will show you these new Welsbach lights and aid you in their selection.
MANUFACTURED BY THE
WELSBACH COMPANY
GLOUCESTER, N. J.

This is the kind of advertising that not only sells the advantages of gas lighting and lighting equipment to the consumer but gives the Welsbach dealers and the gas companies handling Welsbach products a backing which is heartening.

Making Your Window Bring Business

IT IS a good plan to photograph every window display which you make. In addition to the value of the photographs as a complete record of your window publicity, they are a means of keeping you in touch with your progress, or lack of progress, in the art of window trimming. The cost of having prints finished can be reduced to a minimum if some definite contract is made with the photographer. The same results can be secured at even less cost if the gas company owns and operates its own camera. For the benefit of the manager who makes the attempt, we offer the following suggestions.

Time. Photograph a window display at midnight or in the very early morning before people and vehicles are about to interfere. The problem of reflected lights and objects on the window glass is more annoying by daylight than by night.

Turn out all visible lamps in the window or within the range of the camera. The regular window lighting should be of the concealed type, placed high and out of the direct line of vision. If a small lighted sign or lamp is an essential part of the picture, turn it on at the last second of the exposure. Almost no blur will then show.

When the photograph is taken at night, use ordinary lights only, as the flashlight will show in reflections on the plate glass.

Place. The camera should be set on a tripod at one end of the window, and focused on the center. A photograph taken with a straight-on view is flat. It has no depth and gives a very poor idea of the relative position of units.

If the window is well lighted a time exposure of 8 to 10 minutes will give good results. The lens should be stopped down to 32 and it is well to use a double-coated plate.

For developing plates made at night, a weak solution should be used—one ounce of developing solution to 18 ounces of water.

For a permanent portfolio it has been found most satisfactory to mount the photographs on cloth. Mounted on cardboard, they are too heavy, and unmounted they are apt to tear. Never roll a photograph.

Send copies of your window display photographs to the A. G. A. for the gas collection and for special criticism, if you so desire.

Engineering Service for Manufacturer Company Members

SEVERAL of our manufacturer company members have made inquiry as to whether the services of Mr. N. T. Sellman, one of our service engineers, are available to manufacturer company members for the purpose of examining their appliances or rendering other advisory assistance.

The facilities of the Association, or any service which its staff can render, are always available to our manufacturer company members within the definite limits that the Association's proper field of activity prescribes. It is obvious that in such matters as appliance design, or changes of construction where competitive features might be involved, the service engineer could not act in an advisory capacity, but in matters pertaining to safety, combustion and efficiency of appliances there is much that is possible of accomplishment.

The charge for this service is at the rate of $15 a day plus travelling and living expenses while away. This is the same rate as applied to all field service rendered by the Association.

FROM AN EXHIBITOR

"The manner in which our exhibit goods were received and delivered to the Convention hall was very satisfactory and I think Mr. Hall and the balance of the Officers who arranged with the People's Gas Light & Coke Company for this cannot be given too much praise and credit.

"I also wish to mention Mr. F. M. Gocke and Mr. A. W. Carroll of the People's Gas Light & Coke Company as they thoroughly understand how to handle large and numerous shipments.

"Thanking all for the co-operation in giving us such wonderful service and at the same time hoping to be served in a like manner year after year, I am

Yours very truly

(*Signed*) R. L. MOORE.
H. MUELLER MFG. CO.

How Much is a Bath?

WHICH question has been put to the Association in a perfectly logical but somewhat humorous letter from one of our members.

Because the humor of the letter seems to be stressed in particular does not mean that the matter will rest there. Although the question, "How much is a bath?" incites laughter there is, after all, logic in it.

"I notice a great deal of literature being sent out by the gas appliance people making water heaters in which they state that a certain type of heater will supply water for a bath in so many minutes, or will supply heat for so many baths, etc.

"If we are going to use the word 'bath' let us get a definition for it. Salesmen are continually telling customers that they can get sufficient water for a bath in so many minutes. Some people can take a bath in a quart of water, others need several barrels. In other words, the word 'bath' means nothing unless we specify how many gallons of water of a certain temperature constitutes a sufficient quantity of water in which to take a satisfactory bath."

December 13, 1921

TRANSPORTATION TAX REPEALED AS OF JANUARY 1, 1922

HOW FREIGHT SHIPMENTS THEN ENROUTE OR UNUSED MILEAGE BOOKS WILL BE TREATED

In connection with the repeal of transportation taxes on January 1st next the Treasury Department has made the following rulings with respect to shipments then in transit:

If charges have been prepaid, the tax applies.

If charges collect, tax does not apply.

PASSENGER TICKETS OR MILEAGE BOOKS

Where tax has been collected on a ticket or mileage book, which is only partially used before Jan. 1, 1922, a proportionate refund can be secured by making claim on Treasury Department Form 46.

Yours very truly,

C. H. ROHRBACH, *Secretary.*

TECHNICAL SECTION
C. N. CHUBB, Chairman F. C. WEBER, Vice-Chairman
H. W. HARTMAN, Secretary

Report of the Committee on Deposits in Gas Pipes and Meters, 1921*

O. A. MORHOUS, Chairman, New York, N. Y.

THIS report of the Committee on Deposits in Gas Pipes and Meters is a brief summary of information and conclusions, as received during the year from gas companies and is in the nature of a progress report only.

A questionnaire letter was prepared by the 1921 Committee and sent to fifty-two of the largest gas companies in the U. S. This letter was also published in the August issue of the A. G. A. Monthly. Forty-three replies were received, this being equivalent to 82.7 per cent of the total number.

The replies from these companies may be divided into two general classes; 1st, those stating that trouble, in various degrees, was being encountered, and, 2nd, those who were having no trouble from deposits. Of the former class, thirty-seven companies are having trouble with deposits, while six are experiencing no trouble at the present time.

The kind of gas being sent out by the companies reporting deposit trouble is as follows:

21 companies send out mixed coal and carburetted water gas in various proportions.
4 send out straight coal gas.
10 send out straight carburetted water gas.
2 send out straight oil gas.

37 Total.

The deposits ranged in volume from "very little" to "a large amount." Some companies report that deposits are tarry in nature, others, their belief to be that napthalene is the chief cause of stoppage, while others, and by far the larger number, report that the deposits are "dry" to "slightly moist" and have the appearance of iron rust.

Some companies state that they encounter no trouble from stoppages near the works, but only in outlying districts, while others, that all their trouble lies within one mile of the works with no trouble beyond that point, the opinion being that all impurities have been deposited before reaching the outlying points and that this may be due to ground temperature.

A number of companies have no trouble in their low pressure systems but do experience trouble with high pressure service, which is attributed to high velocity of the gas, and deposits from high pressure systems showing a large percent of carbon; on the contrary, how-

*The above Committee report and several others to be printed in this and subsequent issues of the Monthly, were presented verbally at the recent Convention but were not printed in advance and distributed to members. They are, therefore, being published in the Monthly particularly for the benefit and information of those members who could not attend the Convention and hear them presented.

ever, other companies are having stoppage trouble only in their low pressure systems.

Many of the Companies have stoppage trouble seasonably, beginning in August or September and continuing though the winter months. Others report that their trouble is quite evenly distributed over the entire year, being attributed in most cases to their geographical location.

Several Companies report that during the extreme cold weather during 1918-1919, when their outputs of gas taxed the capacity of their plants, the formation of deposits in gas pipes was excessive, and some, that where coal gas was the principal gas sent out, they were troubled with heavy napthalene deposits, no iron rust being encountered.

A few Companies reported that they believed that corrosion was caused by electrolytic action brought about by the presence of cyanogen or sulphuric acid on the metal. Others reported that in their belief carbon dioxide, oxygen, ammonia, cyanogen and sulphur compounds in the presence of moisture were the prime factors in corrosion.

Three Companies report that they have been troubled with a deposit not unlike iron-carbonyl, but that the trouble disappeared in a relatively short time and that they were unable to examine these deposits.

The question has been raised by some companies who manufacture and distribute carburetted water gas only, why cyanogen is found in such comparatively large amounts in deposits when carburetted water gas contains a mere trace of cyanogen. The answer to that may be briefly given: Ammonia and carbon bisulphide, although these are found in only small amounts in purified water gas, interact, resulting in the formation of several compounds of ammonia, cyanogen and sulphur, and to go further, a reaction taks place between the oxygen of the gas and ammonium polysulphide formed by the interaction, whereby ammonium thiosulphate and free sulphur are formed. All of the compounds thus formed will attack metal. To confirm this belief, the following test has been made:

Ammonia and carbon bisulphide vapors in the presence of moisture were passed through a 2″ gas pipe for a period of some weeks. At the end of that time a large amount of deposit was removed from the pipe and on analysis was found to consist essentially of iron rust, cyanogen mainly in the form of Prussian blue, and free sulphur.

Internal corrosion in iron pipes may be brought about in at least six different ways. The first five are active in the presence of water vapor. In the case of the sixth, water vapor is not necessary.

1. By hydrocyanic acid.
2. By products resulting from interaction of carbon bisulphide and ammonia.
3. By excess oxygen.
4. By carbon dioxide.
5. By sulphur dioxide.
6. By dry carbon monoxide acting on metallic iron.

Oxygen and carbon dioxide are intimately associated in bringing about corrosion; oxygen above all will act to a certain degree but will be accelerated by the presence of carbon dioxide and moisture. The oxygen units with metallic iron and forms ferrous oxide. This in the presence of water vapor

unites with the carbon dioxide and forms hydrated ferrous carbonate, soluable in water. This ferrous carbonate takes up more oxygen and forms ferrous oxide, liberating water and carbon dioxide in the free state. This leaves the latter free to attack more iron and the process is repeated.

It is doubtful, if sulphur dioxide is present in carburetted water gas when ready for distribution. Sulphur dioxide, which is formed during the manufacture of blue water gas combines with the ammonia brought about by the cracking of the oil to form sulphide and sulphate of ammonia and these salts are washed out of the gas when the latter passes through the seal pot, containing water, at the outlet of the water gas sets.

Analysis of deposits that were made as a result of this investigation show that they consisted principally of iron oxides (iron rust), compounds of iron with ammonia, cyanogen and sulphur, with varying amounts of light oils, tarry matter, free carbon, napthalene, free sulphur, compounds of sulphur, ammonia and cyanogen, and moisture. Foreign matter as lime and silica was also encountered. These analyses indicate that the deposits are primarily due to chemical action of small amounts of impurities in gas distribution on iron pipe.

Of the companies reporting that they are having no trouble at the present time with deposits, four report that, although they have had trouble to a great extent, the addition of more cooling surface and purifying capacity has proved an effective remedy. This leads to the belief that the trouble may lie in the works and not in the distribution system. Spraying a volatile oil such as kerosene into the mains may relieve the trouble somewhat, but it is doubtful if this will prove an effective remedy. One company reports that they have used kerosene sprayed into the mains at the rate of 3 gallons per million cu. ft. with good results, especially in so far as their meter troubles are concerned. Other companies are trying out this method but no results are available at the present time.

It has been shown in this report that certain impurities in gas will cause corrosion. It is the belief, that corrosion may be checked by better condensation of these impurities in the works. To bring this about means additional expense in providing more cooling surface and purifying capacity and whether this is warranted as against the expense incurred for cleaning out stoppages and at times renewing gas pipes and services as well as renewing meter diaphragms and metal parts can be decided only by each individual company.

The matter of deposits and corrosion in consumers' meters has only been lightly touched on this year, although some data have been received regarding a substance found in the consumers' meters which resembles cumarone. It is understood that some members of the Technical Section would like to have a discussion at this time on this particular phase of the subject and for the benefit of the incoming committee it is a most opportune time.

As Chairman of this Committee, I wish to express our gratification to those companies who so generously responded to the letter of inquiry. Several companies, that had never before analyzed deposits and who did not have adequate laboratory facilities, sent out samples so as to get a report for the Committee. The replies taken as a whole were extremely satisfactory.

Report of the Committee on Cast Iron Pipe Standards

WALTON FORSTALL, Chairman, Philadelphia Pa.

THE Committee on Cast Iron Pipe Standards has ordinarily a two-fold function, first to advance the universal adoption of the Association Standards on the part of both manufacturers and users; and second to recommend such changes in the Standards, as may from time to time be deemed advisable. This year the Committee was also asked to report to the 1921 Association meeting all available data as to the use of the "B" bell since its approval in 1919.

The Committee kept in touch with the manufacturers by issuing a letter on April 6, 1921, a letter as per Exhibit "A." This received a very gratifying response. The users of the Standards, all of whom may without appreciable error be considered as members of the Association, have been reached from time to time during the year by notices inserted in the "Monthly."

"In April 1921, a 16" x 12" bushing was approved as an addition to the Standard and appropriate dimensions added to the table on page 20, of which notice was published in the August Monthly." The Committee now recommends a change in nomenclature as follows: Designate the bell shown on page 9, by "Bell No. 1-Standard Bell" and the bell now known as the "B" bell by "Bell No. 2-Alternate Bell for Cement and Combination Joints." (This bell is shown on the sheet issued in 1919 to be pasted on the blank page opposite page 9.) The change in title is advisable because the "B" bell has been confused with Class "B" water pipe.

The report upon the use of the "B" bell is brief because in the two years since its adoption not much gas pipe of the large sizes for which this bell was especially designed, has been laid and the "B" bell being an innovation must naturally win its own way. The facts so far at hand are shown in Exhibit "B" and must be considered merely as progress reports, but as such, are distinctly favorable. The great saving in joint cost by the use of the "B" bell and the valuable part a cement joint plays in minimizing electrolysis should be especially borne in mind.

EXHIBIT "A"

American Gas Association

Office Committee on Cast Iron Pipe Standards

Broad & Arch Streets, Philadelphia.

April 6, 1921.

American Cast Iron Pipe Company, Birmingham, Ala.

Messrs. Jas. B. Clow & Sons, Chicago, Ill.

Colorado Fuel & Iron Company, Denver, Colorado.

Donaldson Iron Company, Emaus, Pa.

Glamorgan Pipe & Foundry Company, Lynchburg, Va.

Grinnell Company, Providence, R. I.

Lynchburg Foundry Company, Lynchburg, Va.

National Cast Iron Pipe Co., Birmingham, Ala.

Oregon Iron & Steel Co., Portland, Ore.

Warren Foundry & Machine Co., 11 Broadway, New York.

Messrs. R. D. Wood & Co., Philadelphia, Pa.

Gentlemen:

We desire once more to call your attention to the following standards for cast-iron gas pipe:

	Adopted October
A. G. I. Standard Specifications	1913.
A. G. I. Bell and Spigot Pipe and Special Casting	1911.
A. G. I. Flanged Pipe and Special casting	1913.

As you already know, the above form a standard for gas practice, the exclusive use of which our Committee has as its duty to facilitate in every way. The pipe founders may aid in such use by the provision of the requisite patterns, and also by discouraging the manufacture of castings not included in the standards. Any reference to this Committee of requests from customers for non-standard castings will be appreciated, as the Committee welcomes the opportunity of showing that the existing standards are adequate for present needs. It also is ready at all times to consider any supplemental list of castings which future developments may prove to be necessary.

Your truly,
Committee on Cast Iron Pipe Standards.
WALTON FORSTALL, *Chairman*
L. R. LEMOINE
W. CULLEN MORRIS

EXHIBIT "B"

Experience with "B" Bell for Cement Joints.
Detroit City Gas Company.

156 feet of 16" pipe laid in November, 1920.
Remarks:

This was a purifier installation at one of our plants. The joints on this pipe were made up in a manner identical with the specifications for other sizes of cement joints, vis., a strand of yarn was caulked into the back of the bell centering the pipe and neat cement worked into the joint. A strand of yarn was placed near the face of the joint, caulking the cement. The line of pipe is about 20 feet in the air, and is consequently exposed to all of the variations of temperature met with in this climate. It has now gone through a cycle of seasons and has been tested at frequent intervals with soapsuds. No leak has developed at 5 pounds pressure.

4150 feet of 16" pipe laid in August, 1921.
Remarks:

This installation was in the eastern part of the city. The first few joints were made by use of the customary yarn at the back of the bell for centering the pipe, but the entire remainder of the joint was filled with neat cement, working it in by hand as carefully and thoroughly as possible. Practically all of these joints were found to be leaking when the pressure test was applied. After a number of experiments and trials, the following plan was adopted for the remainder of the joints: No yarn was used in the back of the bell. Two small steel centering blocks about 1" x 1" x 3-8" thick were placed in the bell, the spigot of the pipe resting on these centering blocks. Before this was done, however, a small amount of cement was troweled into the back of the bell, which was intended to take the place of the yarn. This cement was allowed to obtain its initial set, following which the bell was filled completely to within ⅜" of the face. A double strand of yarn was then thoroughly caulked against this cement to drive out air bubbles and compact the cement in the joint. Fifteen hours later the joints were tested with air at 25 lbs. and were found tight. We are attempting now to make up a follower tamping block which we expect to use so as to get away from the use of the final yarn, making this joint thereby entirely of cement.

Syracuse Lighting Company.

445 feet of 16" pipe, laid in September, 1920.
Remarks:

Cement joints used with exception of joints on specials and spigot pipe without beads. Combination cement and cast lead joints used on these. The main has been constantly under a pressure of from one to five pounds since installed. Vent boxes are in place over each joint for the purpose of detecting leakage. Estimated total temperature range, 35° F. No leaking joints to date. We are now constructing 1285 feet of 16" low pressure with all "B" bells, and 750 feet of 12" high pressure, 400 feet of which will be with "B" bells and all cement joints, except as noted above.

Philadelphia Gas Works.

1300 feet of 20" pipe laid in September, 1921.
Remarks:

As this line has been laid so recently, no evidence as to its tightness is of any value, but it may be of interest to quote certain details of joint making:

Size of Joint *Depth of Bell* *Number of Joints*
20" 6" 104

JOINT COST
Making

Cement	*Yarn*	*Labor*
Size of Joint	*Depth of Bell*	*Number of Joints*
8.65 qts.=.30	2.5 lbs.=.40	2.4 man hrs -1.05
Total		1.75

Temperature Control

Burlap and Lumber	*Labor*	
.15	.35 man hrs. = .12	.27

Total Joint Cost $2.02

To compare with the above cost of $2.02 should be set down $7.74 as the total cost, material and labor incurred in making each lead wool joint with pneumatic caulking in an 1800 foot line of 20" pipe laid in August, 1921.

1200' of 16" pipe laid in September, 1921.
Remarks:
Details of joint making follow:

Size of Joint	*Depth of Bell*	*No. of Joints*
16"	6"	110

JOINT COST
Making

Cement, 4.91 qts.	$ .17
Yarn, 1.8 lbs.	.29
Labor, 1.27 man hrs.	.52
Total	$ .98

Temperature Control

Burlap and Lumber	*Labor*	
.15	.27 man hrs. = .10	.25

Total Joint Cost $1.23

With reference to both these jobs (20" and 16") it is to be noted that they were laid under temperature conditions relatively unfavorable to cement joint work. In order to reduce as far as possible the temperatures at which the joints were made and the cement set, the expense under "Temperature Control" was incurred.

"NO longer can it be truthfully said that a public service company is a thing apart, an alien in the community, with interests antagonistic to the general welfare. These public agencies are integral parts of the communities they serve, and especially is this true of those companies whose capital is widely owned by the people who depend upon them for an essential service."

"When the people * * * understand and appreciate that every dollar they invest in the securities of our local public utilities brings additional dollars to be expended in labor, material and merchandise and for the upbuilding of those things which are essential to the doubling and trebling of the population, I do not think that they can fail to see it in the light that I see it—the *people's project*.—R. H. BALLARD, *Southern California Edison Co.*

Report of 1921 Chemical Committee

C. A. LUNN, Chairman, New York, N. Y.

THE 1921 Chemical Committee, consisting of 18 members, completed its organization in April and has held two meetings during the year. Much work has been handled by correspondence because the membership was so widely scattered geographically.

The efforts of your committee have been directed along the following lines:

1st: Preparation for the A. G. A. Monthly of abstracts of articles on chemical and gas engineering subjects appearing in technical journals.

2nd: Preparation by members of the committee of articles dealing with the work chemists are doing to further the development of our industry, for publication in the A. G. Monthly.

3rd: Cooperative analytical work for the purpose of furthering the adoption and general use of the most advanced methods of chemical analysis. And

4th: A survey of the laboratory facilities of the gas companies, scientific and educational institutions and consulting chemists of the country, to serve as an aid to the Association in answering numerous inquiries received from its committees and members.

The abstracts for our Monthly are now drawn from fifteen technical journals; seven published in the United States and eight in foreign countries. Effort was made to submit a selected list of abstracts to the Monthly within one month of the date of original publication of the articles. This was done but their publication has been seriously hampered by the printers' strike.

During the year three articles on chemical subjects, prepared by members of this committee, have been published in the Association Monthly and a fourth article awaits publication. The value of these articles is evident to all who have read them. Much good will accrue both to our industry and its chemists if the publication of articles describing original chemical work and particularly the practical applications of chemistry can be stimulated. This effort should not be confined to members of this Committee. Every chemist in the industry has some story worthy of the telling and in giving it to the Monthly he is perpetuating the purpose of our Association.

The cooperative analytical work undertaken this year follows the lines practiced by the guilds of former days. It is primarily an exchange of experience to the end that the best methods of chemical analysis may be adopted and brought into general use in the industry. Our initial efforts were directed to a study of methods of analysis of coal and coke. A subcommittee under the Chairmanship of Mr. A. C. Fieldner was appointed to deal with the subject. In May, one sample of anthracite and two of bituminous coal were sent to sixteen members of the Committee for proximate analysis and the determination of sulphur and heating value. When the analytical results were correlated startling discrepancies were noted for certain laboratories. Study of the methods of analysis used by these laboratories showed that they had deviated from the standard method as published in the Gas Chemists Handbook. The principal causes of error may be briefly summarized as follows:

In the determination of moisture, dry air was not circulated through the moisture oven at a rate sufficient to change the volume of the oven from two to four times per minute.

In the determination of volatile matter crucibles of from 25 c.c. to 40 c.c. capacity with loosely fitting covers were used whereas the standard method prescribes a crucible of from 10 c.c. to 20 c.c. capacity with a close fitting capsule cover.

In the determination of ash, failure to maintain the temperature of the ashing furnace fairly constant at 750° C., after volatile matter has been expelled.

In the determination of heating value the use of bombs with inner linings of nickel, which is attacked by sulphuric and nitric acids, and failure to make proper corrections for acidity and sulphur.

During September four more samples of coal and coke were forwarded to the laboratories cooperating in the first series of tests. We hope and firmly believe that the results of these analyses will show that a large number of laboratories can check within specified limits when the standard methods of analysis are followed. Pending publication of our final report on this subject I cannot emphasize too strongly that the use of these standard methods is essential to accurate analysis of both coal and coke.

Cooperative analytical work has also been undertaken on Gas Oils. A subcommittee under the Chairmanship of Mr. C. A. Schnerr is dealing with this subject. Standard methods for determining the value of gas oils are badly needed and this need will increase as our supply of these oils decreases. This subcommittee has formulated a thorough and aggressive program but the data collected up to this time does not justify any conclusions.

The purpose of the survey of laboratory facilities is to have on file at Association Headquarters information regarding:

1st: Facilities of analytical or consulting laboratories prepared to undertake work for gas companies not maintaining laboratories of their own.

2nd: Personnel and facilities available at laboratories of gas companies willing to cooperate in any testing or investigation work undertaken by Association committees. And

3rd: Special facilities at laboratories of gas companies or institutions, available for research on any problem of general interest to the gas industry, which might not be advantageously undertaken by any company, but which might be undertaken through the agency of the Association.

Much effort was devoted to the preparation of a questionnaire which would secure the information desired with a minimum of effort on the part of the recipient. In July this questionnaire was sent out to every gas company in the country having a capacity of 1,000,000 cu. ft. or more of gas per day, and a selected list of educational and scientific institutions, consulting laboratories and related industries. Some 260 questionnaires were sent out and to date replies have been received from only about 40 per cent of this number. Doubtless many of you here have not replied to this questionnaire and your committee ventures the hope that you will give this matter your early attention. It is always a great asset to know the right man for a job and this survey, if complete, should answer this need insofar as our chemical and physical problems are concerned.

Earlier Chemical Committees have presented to the industry a most excellent handbook of chemical methods, but if these are not generally followed their purpose is largely defeated. We

must foster their use and at the same time provide means of keeping abreast of the advances in our science. Publication of articles describing original researches serves a double purpose; first it leads to a more general appreciation of the usefulness of chemistry and its applications to our industry and second, it apprises other chemists of our problems and brings new hands to their solution. In the things we have undertaken this year we have made but a meagre start. Your committee hopes that this program will prove worthy of continuance and expansion.

Report of American Committee on Electrolyses

THE American Committee on Electrolysis has just issued its 1921 report, superseding its preliminary report of 1916. This report embodies such statements of facts and descriptions, and discussions of methods of electrolysis testing and electrolysis mitigation as the members of the committee have been able thus far to agree upon unanimously. In the preface, signed by Bion J. Arnold, Chairman of the Committee, the following statement is made:

"While this report supersedes the preliminary report of 1916, it should, unless the principals see fit to discontinue the work of the main committee, be considered as in the nature of a progress report and not as final, as it is impossible at the present time to finally answer many of the outstanding questions involved. Also it is to be understood that the report is confined to the technical and engineering aspects of the subject and does not attempt to deal with matters of policy or with legal questions, such as the rights and responsibilites of the several interests concerned."

The report comprises five chapters. Chapter One sets forth a rather full statement of principles and definitions. Chapter Two is devoted to a somewhat detailed discussion of the design, construction, operation, and maintenance of railways and underground structures affected by electrolysis, and to a discussion of questions involving the interconnection of affected structures and railways, ending with a summary of good practice as agreed upon by the committee. Chapter Three gives a discussion of the fundamentals of the whole question of electrolysis surveys, their purpose, scope, possibilities, and interpretation, and also a discussion of the instruments suitable for electrolysis testing. Chapter Four is devoted to an analysis of present European practice relating to electrolysis mitigation. In Chapter Five the committee outlined certain researches which it deems necessary to have carried out in order to make it possible to reach a final solution of some of the fundamental questions pertaining to electrolysis mitigation.

The American Committee on Electrolysis which prepared this report is a joint committee having three representatives from each of the following organizations:

American Institute of Electrical Engineers
American Electric Railway Association
American Gas Association
American Railway Engineering Association
American Telephone and Telegraph Company
American Water Works Association
National Electric Light Association
Natural Gas Association
National Bureau of Standards

Copies of this report are available at Association Headquarters to company members at $1.00 each.

Abstracts of Technical Articles of Interest to Gas Men

Contributed by Sub-Committee on Abstracts* of the Chemical Committee

Sur La Fabrication De L'Hydrogéne Par Liquefaction Partielle Du Gaz A L'Eau. By Georges Claude, Comptes rendus, Vol. 175, No. 16, 653-766 (Oct. 17, 1921). Largely description of the apparatus and laboratory experiment. Diagr. (K. C. Walker)

Ascension Pipe Developments. Editorial, Gas World, Vol. 75, No. 1941, 259-260 (Oct. 1, 1921). Writer calls for more research on the subject and gives short description and comment upon Congdon system. (K. C. Walker)

The Manufacture of Neutral Sulphate of Ammonia. By J. B. Hansford, Gas World, Vol. 75, No. 1941, Coking Sec. 13-15 (Oct. 1, 1921). Record of H experiments at Bedford Gas Company's plant. Describes Bedford process of working down neutrality of saturator bath before charge is removed. Loss of ammonia and discoloration overcome by providing necessary apparatus to enable the still gases to be sent off from the bath when neutral point is reached. Gives description of plant drying apparatus, and advantages of process. Discussion. (K. C. Walker)

Report on Recording Calorimeters (Fifth report of Research Sub-Committee of British Gas Investigation Committee), Gas World, Vol. 75, No. 1943, 314-321 (Oct. 15, 1921); Gas Journal, Vol. 156, No. 3049, 197-201 (Oct. 19, 1921). Report taken up very largely with Simmance recorder and its performance. Junker and Boys instruments used for certain tests. Beasley recorder also described and defects stated. Later improvements on Simmance recorder given. Summary and discussion. (K. C. Walker)

Carbonization in Horizontal Retorts. By G. M. Gill, Gas Journal, Vol. 156, No. 3049, 212-224 (Oct. 19, 1921); Gas World, Vol. 75, No. 1943, 327-337 (Oct. 15, 1921). Experiments conducted at South Metropolitan Gas Company on Durham and Northumberland coals. Analyses of coals given, treatment of coal, inspection system, design of producers, studies of grate areas for producers, design of retort settings, and retort pipes and mouth pieces. Reduction of inerts, size and duration of charge, output of gas operation of retorts, regulation of combustion chamber temperatures, and discussion follows. (K. C. Walker)

External Corrosion of Mains and Services. By J. G. Taplay, Gas Journal, Vol. 156, No. 3049, 210-211 (Oct. 19, 1921); Gas World, Vol. 75, No. 1943, 349-351 (Oct. 15, 1921). Consideration of pipes corroded in acid and alkali soils. Discussion. (K. C. Walker)

Liberation of Nitrogen from Coal and Coke as Ammonia. By A. C. Monkhouse, Gas World, Vol. 75, No. 1943, 337-343 (Oct. 15, 1921). Further studies on the influence of atmosphere upon the products of carbonization. Experiments carried on with coal coked at 500 deg., 800 deg., and 1100 deg. Then the action of hydrogen on these three cokes was studied. Detailed tables, and description of three experiments. Discussion. (K. C. Walker)

Path of Travel of the Gases in the Coke Oven. By G. E. Foxwell, Journal of the Society of Chemical Industry, Vol. 40, 193T (Sept. 15, 1921). A mathematical discussion based on small scale experiments. (O. L. Kowalke)

The Briquetting of Charcoal. By A. F. Joseph and B. W. Whitfield, Journal of the Society of Chemical Industry, Vol. 40, 190T (Aug. 31, 1921). Sudan wood used. Course charcoal is better than fine. Using wood tar as a binder and then firing the briquettes gives good results. (O. L. Kowalke)

Analysis of Fibro-Cement. By S. J. Smart and P. C. Pecover, Journal of the Society of Chemical Industry, Vol. 40, 185T (Aug. 31, 1921). Methods of analyzing sheets made of asbestos and cement. (O. L. Kowalke)

Catalytic Oxidation of Hydrocarbons, Alcohol, and Carbon Monoxide. Journal of the Society of Chemical Industry, Vol. 40, 307R Aug. 31, 1921). (O. L. Kowalke)

Nitrogen Products. Journal of the Society of Chemical Industry, Vol. 40, 285R (Aug. 15, 1921). A review of the British Nitrogen

*Abstractors names appear in parentheses following each item.

Products Committee Report. (O. L. Kowalke)

Sulphate of Ammonia and Vegetables, Flowers and Fruits. Journal des Usines a Gaz, Vol. 45, No. 20, 313-314 (Oct. 20, 1921). The writer gives formulae for mixing sulphate of ammonia with other artificial fertilizers and methods of use. (E. L. Hall)

The Ash Fusion Gas Producer, Its Application and Future. By A. Fichet, Le Genie Civil, Vol. 79, No. 16, 329-332 (Oct. 15, 1921). (E. L. Hall)

The Manufacture of Hydrogen by the Partial Liquefaction of Water Gas. By Georges Claude, Le Genie Civil, Vol. 79, No. 17, 349-350 (Oct. 22, 1921); Vol. 79, No. 18, 376-377 (Oct. 29, 1921). (E. L. Hall)

Comparison of Heating by Gas and Electricity. By A. Grebel, Le Genie Civil, Vol. 79, No. 12, 249 et seq. (Sept. 17, 1921). The author gives an array of arguments and figures to refute the claims made by some French electrical apparatus manufacturers and writes on the advantages of electricity over gas for cooking and heating. Tables comparing the efficiency of converting coal to electricity and to gas and the efficiencies of various gas and electrical cooking and heating appliances are given. (E. L. Hall)

Gas of Today and its Manufacture. By W. Bertelsmann, Chem. Ztg., 45, 213-6 (1921) cf. C. A. 14, 2407. (E. C. Uhlig)

Gas of Today and its Utilization. By W. Bertelsmann, Chem. Ztg., 45, 263-6 (1921); cf. preceding abstract. (E. C. Uhlig)

The Goffin Process. By L. Stock, Journal Gasbeleuchtung, 63, 833-5 (1920); Gas Journal, 153, 804-5 (1921). (E. C. Uhlig)

Relation Between the Utilization of the Heat from the Waste Gases and Chimney Draft. By L. Stock, Gas and Wasserfach, 64, 33-4 (1921). (E. C. Uhlig)

Laboratory Distillation of Coal Tar. By H. D. Bell, J. S. African Assoc. Anal. Chem. 4, 8-10 (1921). (E. C. Uhlig)

Estimation of Water in Tar. Anon. Gas und Wasserfach, 64, 71-3 (1921). (E. C. Uhlig)

Modern Practice in the Coal Tar Industry. By C. Berthelot, Rev. Metal. 17, 63-92 (1920). (E. C. Uhlig)

Sulphur in Benzene. Anon, Chem. Trade Journal, 68, 304 (1921). (E. C. Uhlig)

The Recovery of Ethylene and Ethyl Alcohol from the Gases Dry Distillation. By Bruno Waeser, Brennstoff Chem. 2, 90-1 (1921). (E. C. Uhlig)

Anti-Corrosive Preparations for Iron and Steel. "Latex." Chemical Age (London) 4, 367 (1921). (E. C. Uhlig)

A New Method of Coal Analysis. By H. Groppel, Dingler's Polytech. Journal 1919, 134; Listy cukrovar 38, 78 (1919). (E. C. Uhlig)

Graphic Representation of the Analysis of Flue Gases Derived from the Combustion of Coal. By F. Schulte, Gluckauf 56, 532-6 (1920). (E. C. Uhlig)

Determination of Benzene Hydrocarbons in Illuminating and Coke-Oven Gas. By E. Berl, Karl Andress and Wilhelm Muller, Tech. Hochschule, Darmstadt, Z, angew, Chem. 34, Aufsatzteil 125-7 (1921). (E. C. Uhlig)

Gas Main Stoppages. By J. Dollinger, Z. Ver. Gas-Wasserfach. 61, 21-4 (1921). (E. C. Uhlig)

Properties of Typical Crude Oils from the Producing Fields of the Rocky Mountain District. By E. W. Dean, M. B. Cooke and A. D. Bauer, Bureau of Mines Reports of Investigations, No. 2235, 50 pp. (1921). (E. C. Uhlig)

New Technical Methods for Separating Aqueous Oil Emulsions. By I. Moscicki and K. Kling, Przemysl Chem. 4, 2-8 (1920). (E. C. Uhlig)

The Detection of Phenols in Water. By R. D. Scott, Journal Industrial Engineering Chemistry 13, 422 (1921). (E. C. Uhlig).

By Product Coke Ovens and Their Relation to Our Fuel Supply. By E. B. Elliott, Semet Solvay Co., Syracuse, N. Y., J. Am. Soc., Heating Ventilating Eng. 27, 381-400 (1921). (E. C. Uhlig)

A Recently Developed Dust Explosion and Fire Hazard. By David J. Price and Hylton R. Brown, U. S. Dept. of Agriculture Circ. 171, 7 pp. (1921). (E. C. Uhlig)

Industrial Explosion Hazards. Gases, Vapors, Flammable Liquids and Dusts. By W. D. Keefer, Safe Practices 34, 12 pp. (1920). (E. C. Uhlig)

Coal-Dust Hazards in Industrial Plants. By L. D. Tracy, Bureau of Mines Reports of

Investigations 2242, 6 pp. (1921). (E. C. Uhlig)

Protection of Iron with Paint Against Atmospheric Corrosion. By J. Newton Friend, J. Iron and Steel Inst. Advance copy No. 5, 4 pp. (1921); cf. C. A. 13, 1156. (E. C. Uhlig)

Relativity and The Problems of Coal, Low-Temperature Carbonization and Smokeless Fuel. By Henry E. Armstrong, J. Roy. Soc. Arts, 69, 385-407 (1921). (E. C. Uhlig)

Burning Petroleums. II. By E. C. Bowden-Smith, Petroleum Times 5, 609-10 (1921); cf. C. A. 15, 2176. (E. C. Uhlig)

The Evolution of the Recovery and Treatment of the By-Products of the Carbonization of Coal. By Ch. Berthelot, Chimie l'Industrie 5, 384-97, 508-17 (1921). (E. C. Uhlig)

Dry Coke Quenching. Anon, Gas und Wasserfach 64, 204-5 (1921). (E. C. Uhlig)

Condensers in Coke-Oven Plants. By E. Ore, Technique moderne 12, 7-11 (1920). (E. C. Uhlig)

The Technical Analysis of Petroleum. By I. Lazennec, Age de Fer 37, 1058-60 (1921). (E. C. Uhlig)

The Refining of Crude Petroleum. By Albert H. Low, Colo. School of Mines Quarterly 15, N. 2, 3-10 (1920). (E. C. Uhlig)

Flash Point Apparatus. By F. Wilbur Shulenberger, Paint, Oil and Chem. Rev. 71, No. 24, 9, 18-20 (1921). (E. C. Uhlig)

Guides to Analyses. VIII. The Interpretation of Paint Analysis. By Edward C. Holton, Chem. Bull. (Chicago) 8, 128-9 (1921). (E. C. Uhlig)

An Example of Rust Formation. By E. Sauer, Chem. Ztg. 45, 421 (1921). (E. C. Uhlig)

Practical Aspect of the Corrosion Problem. By John F. Thomson, Trans. Am. Electrochem. Soc. 39, preprint (1921). (E. C. Uhlig)

Report on the Simmance Total-Heat Recording Calorimeter. By T. Gray and A. Blackie, Fuel Reseach Board Tech. Paper No. 2, 23 pp. (1921). (E. C. Uhlig)

Water Gas. By Leo Vignon, Ann. Chim. 15, 42-60 (1921). (E. C. Uhlig)

Proposed A. S. T. M. Distillation Test for Gasoline, Kerosene Methods. Anon, Nat. Petroleum News 13, No. 24, 33-4 (1921). (E. C. Uhlig)

Bureau of Mines Method for Determining Water in Petroleum. By E. W. Dean and W. A. Jacobs, Bureau of Mines Reports of Investigations No. 2159, 3 pp. (1920). (E. C. Uhlig)

Metal Protective Paints. By Henry A. Gardner, Trans Am. Electrochem. Soc. 39, preprint (1921). (E. C. Uhlig)

(Continued from page 32)

fice, some another, have been allowed, without answer, to disseminate alleged facts in derogation of practical, legitimate utility development. I would say to the public, get our utility development as we may, the fact remains we are going to pay a reasonable return on the fair value of the property used in giving the service. It makes no difference whether municipally owned, home-ruled, or privately owned and regulated.

I find myself quite in accord with Mr. Perry in this matter. Would it not be better all around could all of us be a little more reasonable and reasonably fair when speaking of or dealing with a public service corporation? Nor should we fail to remember that, after all, these public utilities are owned by the people who to the number of many hundreds of thousands have invested their savings in the shares of these companies. That is, to my mind, another good reason why we should try to show some appreciation of the many great benefits we receive from the public service corporations.

I would like to see prosperity among those who promote public utilities. That is not saying that I think they should be allowed to "hog the game," but rather that the welfare of all the community is so tied up with the public utilities that all of us should be united in the determination to make sure that they get a square deal.

F. W. AYER.

AMERICAN GAS ASSOCIATION, Inc.

Current List No. 48—January, 1922

Rate Changes

Where information is not secured from company receiving increase, the source of information is noted in brackets. See Cumulative List No. 7, of March, 1921, for explanation of abbreviations. This list includes only changes reported as secured subsequent to June, 1921.

CALIFORNIA

Stockton: Co., reports decrease effective December 30, 1921. New rate: 1st 25 MCF. $1.22 gro., $1.17 net—next 25 MCF. $1.07 gro., $1.02 net—next 25 MCF. 97c net—next 25 MCF. 87c net—next 25 MCF. 77c net—over 125 MCF. 72c net per M. M. M. Chge. unchanged. Note: Oil Clause: New rate subject to increase or decrease of 1½c per MCF. for each 10c increase or decrease in cost of oil above or below $1.70 per barrel. Calif. R. C.

CONNECTICUT

Hartford: Co., reports increase for gas supplied Manchester effective Oct. 1, 1921. New rate; 1st CCF 61c—next 990 CCF 11c—over 1000 CCF 10.2c per C—disc. 1c per CCF. Old rate; 1st 10 MCF 12c per CCF—next 40 MCF 11c—over 40 MCF 10c per CCF—disc. 1c per C. C. Chge. 50c per month. B.t.u. 528.

Norwich: Co., reports decrease effective Jan. 1, 1922. New rate: 1st 5 MCF 13½c per CCF—next 10 MCF 12½c—over 15 MCF 11½c per CCF. C. Charge 90c. Over 1,000 MCF per mo. 11½c per CCF plus C. Chge.

Stamford: Co., reports third increase effective Dec. 1, 1921. New rate: 1st 20 MCF $1.40—next 80 MCF $1.30—next 100 MCF $1.15—over 200 MCF $1.05—disc. 10c per M. 10 days. S. Chge. unchanged except first step 3-5 lt. meters 50c instead of 75c.

IOWA

Anamosa: Co., reports decrease effective May 1, 1921. New rate: $3.35 gross, $3.25 net per MCF. M. M. Chge. $1.50.

Mason City: Co., reports decrease effective Aug. 1, 1921. New rate: 1st 10 MCF. $1.75—next 15 MCF. $1.65—next 10 MCF. $1.55—next 10 MCF. $1.45—over 45 MCF. $1.35 per M.—disc. 10c per M.

Shenandoah: Co., reports second increase effective July 1, 1920. New rate: $2.15 net per MCF.

Newton: City of (Municipal) reports increase effective Jan. 1, 1921. New rate $2.50 per MCF—disc. 5 per cent, 15 days. Old rate (B. D.) $1.35 per MCF.

Sheldon: Gas Co., reports decrease effective Oct. 1, 1921. New rate: 1st 5 MCF $2.50—next 5 MCF $2.40—next 10 MCF $2.30—over 20 MCF $2.20 per M—disc. 30c per M. 10 days. Old rate the same with no discount.

MASSACHUSETTS

Braintree: Co., reports decrease effective Jan. 1, 1922. New rate: 1st CCF $1.10—over 1 CCF 19c per CCF—disc. 10 per cent 15 days.

Brockton: Co., reports second increase effective Oct. 20, 1921. New rate: 1st CCF 82c gross, 70c net—next 4 CCF 23c—next 195 CCF 15c—next 30 MCF 14c—next 50 MCF 13c—disc. 2c per CCF 10 days. M. M. Chge. 50c per month adjusted yearly. H. P. rates: 1st CCF 92c—next CCF 28c—next 193 CCF 16c—next 30 MCF 15c—next 50 MCF 14c per C. Disc. and M. M. Chge. same.

Holyoke: Co., reports decrease effective Oct. 1, 1921. New rate $1.10 gro. $1.00 net per MCF prompt pay. S. Chge. 3-5 lt. meter 50c—10-20 lt. 60c—over 20 lt. $1.00 per mo. Note: Rate decrease an experimental one.

North Adams: Co., reports decrease effective Jan. 1, 1922. New rate: 1st 10 MCF $1.60—next 10 MCF $1.50—over 20 MCF $1.40 per M—disc. 10c per M. M. M. Chge. $6.00 per year.

MICHIGAN

Battle Creek: Co., reports decrease effective Oct. 20, 1921. New rate: 1st 3 CCF 78c gross—75c net—over 3 CCF 13.6c gross, 12.6c net per C—disc. 1c per C. D.P. M. M. Chge. 50c.

Grand Rapids: Co., reports decrease effective Nov. 3, 1921. New rate 14c gro., 13c net per CCF. B.t.u. reduced from 550 to 530. Note: New rate is temporary, to remain in force until the P. U. C. completes valuation of plant after which a permanent rate is to be fixed.

Pontiac: Co., reports decrease effective Dec. 1, 1921. New rate: 1st 100 MCF 15c per CCF—over 100 MCF 11½c per CCF—disc. 1c per CCF. M. M. Chge. 75c net.

NEBRASKA

Norfolk: Gas Co., reports decrease effective Aug. 1, 1921. New rate: $2.00 to $1.60 net per MCF. M. M. Chge. 50c. Old rate effective Sept. 1, 1920 $2.25 to $1.90 net per MCF. M. M. Chge. same. B.t.u. 525 to 600. Franchise expires Feb., 1922.

NEW YORK

Addison: Co., reports second increase effective Oct. 21, 1918. New rate: 70c gro., 65c net per MCF. M. M. Chge. one MCF. Co., reports third increase effective Oct. 1, 1921. New rate 81c gro. 76c net per MCF. M. M. Chge. unchanged.

Bay Shore: Co., reports decrease effective Oct. 1, 1921. New rate $1.80 straight line per MCF.

Rensselaer: Co., reports third increase effective Nov. 26, 1921. New rate: 0 to 300 c. f. $1.00—next 7 CCF 17c—next 40 CCF 16c—next 150 CCF 15c—over 200 CCF 14c per CCF. S. Chge. canceled. Company operates and offers Hudson choice of old or new rate as above.

Saratoga Springs: Co., reports increase effective Nov. 26, 1921. New rate: 1st 25 MCF $1.80—over 25 MCF $1.60 per M—disc. 10c per M. 10 days. M. M. Chge. 58c.

Troy: Co., reports decrease effective Jan. 1, 1922. New straight line rate $1.35 net per MCF. Wholesale Light, Heat and Power 1st 100 MCF $1.25—next 100 MCF $1.15—over 200 MCF $1.05 per M—prices net.

NORTH CAROLINA

Concord: Co., reports third increase effective Jan. 1, 1922. New rate: 1st 10 MCF. $2.50—next 10 MCF. $2.30—over 20 MCF. $2.50 per M. disc. 10c per M. M. M. Chge. $1.00.

RHODE ISLAND

Woonsocket: Co., reports decrease effective Nov. 1, 1921. New rate: 1st 4 MCF $1.40—next 10 MCF $1.30—over 14 MCF $1.20 per M—disc. 10c per M. S.Chge. 50c.

TENNESSEE

Chattanooga: Gas Co., reports increase effective Oct. 24, 1921. New rate: 1st 50 MCF $1.75—next 50 MCF $1.50—next 100 MCF $1.30—next 100 MCF $1.10—over 300 MCF $1.00 per M—disc. 10c per M. M. M. Chge. $1.00 per month. Old rate: 1st 50 MCF $1.10—next 50 MCF 90c—next 100 MCF 70c—next 400 MCF 60c—over 600 MCF 50c per M—disc. 10c per M.

Classified Directory--Manufacturers of Gas Equipment

Company Members Only, American Gas Association, Inc.

ARC LAMPS (Gas)
General Gas Light Co., New York, N. Y., Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

ASBESTOS AND MAGNESIA PRODUCTS
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

BAGS (Gas Main)
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.

BENCHES
Bartlett Hayward Co., The, Baltimore, Md.
Gas Machinery Co., Inc., The, Cleveland, Ohio
J. H. Gautier & Co., Jersey City, N. J.
Missouri Fire Brick Co., St. Louis, Mo.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Riter-Conley Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.

BENCH IRON WORK
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Bartlett Hayward Co., The, Baltimore, Md.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Equipment Co., The, 24 State St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
Missouri Fire Brick Co., St. Louis, Mo.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Stacey Manufacturing Co., The, Cincinnati, Ohio.
Western Gas Construction Co., The, Fort Wayne, Ind.

BOILERS (Gas)
Bryant Heater & Mfg. Co., The, Cleveland, Ohio, Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Gallaher Boiler Co., Laclede Gas Bldg., St. Louis, Mo.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Hugo Manufacturing Co., West Duluth, Minn.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Kidde & Co., 103 Park Ave., New York, N. Y.
National Machine Works, Sheffield & North Ave., Chicago, Ill.
Ofeldt Gas Fired Boiler Co., Inc., The, Nyack-on-the-Hudson, N. Y.
Wales Co., The, Kalamazoo, Mich.

BOILERS (Gas for House Heating)
American Radiator Co., New York, N. Y., Chicago, Ill.
Bryant Heater & Mfg. Co., The, Cleveland, Ohio, Chicago, Ill.
Gallaher Boiler Co., Laclede Gas Bldg., St. Louis, Mo.
Kidde & Co., 103 Park Ave., New York, N. Y.

BOILERS (Waste Heat)
Bartlett Hayward Co., The, Baltimore, Md.
U. G. I. Contracting Co., The, Broad and Arch Sts., Philadelphia, Pa.

BLOWERS, BOOSTERS, EXHAUSTERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Connersville Blower Co., The, Connersville, Ind.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Isbell-Porter Co., Newark, N. J.
C. M. Kemp Mfg. Co., The, Baltimore, Md.
Maxon Furnace and Engineering Co., Muncie, Ind.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
Needham Gas Appliance Co., The, 1 S. Lafayette St., New York, N. Y.
P. H. & F. M. Roots Co., The, Connersville, Ind.
B. F. Sturtevant Company, Hyde Park District, Boston, Mass.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.
Wilbraham-Green Blower Co., Pottstown, Pa.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

BRAZING TABLES
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Rathbone, Sard & Co., Albany, N. Y.

BRICK, FIREBRICK
Gas Machinery Co., Inc., The, Cleveland, Ohio
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Improved Equipment Co., The, 24 State St., New York, N. Y.
Missouri Fire Brick Co., St. Louis, Mo.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Russell Engineering Co., St. Louis, Mo.

BRAKE AND FRICTION MATERIALS
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

BROILERS (Hotel)
American Stove Co., St. Louis, Mo.
Geo. M. Clark & Co., Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
De Matteis Broiler System Co., Inc., The, New York, N. Y.
Michigan Stove Co., The, Detroit, Mich.
Rathbone, Sard & Co., Albany, N. Y., Aurora, Ill.
Geo. D. Roper Corp., Rockford, Ill.

BURNERS (Industrial)
American Gas Appliance Co., 108 Lawrence St., Brooklyn, N. Y.
American Gas Furnace Co., 24 John St., New York, N. Y.
Baltimore Gas Appliance & Mfg. Co., The, Baltimore, Md.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Stove Co., The, Mansfield, Ohio.
Equitable Meter Co., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R. I.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.

BURNERS (Industrial)—(Continued)
Hale Manufacturing Co., Chicago, Ill.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Hugo Manufacturing Co., West Duluth, Minn.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa.
C. M. Kemp Mfg. Co., The, Baltimore, Md.
Maxon Furnace & Engineering Co., The, Muncie, Ind.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., The, 1 S. Lafayette St., New York, N. Y.
Geo. D. Roper Corp., Rockford, Ill.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.
A. H. Wolff Gas Radiator Co., The, 4 Great Jones St., New York, N. Y.

BURNERS (Lighting)
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Light Co., New York, N. Y., Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Lindsay Light Co., New York, N. Y., Chicago, Ill.
Welsbach Co., Gloucester, N. J.

BY-PRODUCT OVENS
Andrews Engineering Co., Inc. Chicago, Ill.
Belgian American Coke Ovens Corp., St. Louis, Mo.
By-Products Coke Corp., Chicago, Ill.
Foundation Oven Corp., Woolworth Bldg., New York, N. Y.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Equipment Co., The, 24 State St. New York, N. Y.
Koppers Co., The, Pittsburgh, Pa.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Semet-Solvay Co., Syracuse, N. Y.

BY-PRODUCT RECOVERY APPARATUS
Bartlett Hayward Co., The, Baltimore, Md.
Foundation Oven Corp., Woolworth Bldg., New York, N. Y.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Koppers Co., The, Pittsburgh, Pa.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

CALORIMETERS
American Meter Co., Inc., New York, N. Y.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
Maryland Meter Works, Baltimore, Md.
D. McDonald & Co., Albany, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Superior Meter Co., Bush Terminal Bldg., Brooklyn, N. Y.

CASING, TUBING (Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

CASTINGS (Brass, Grey Iron)
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Bartlett Hayward Co., The, Baltimore, Md.
Cleveland Co-Operative Stove Co., The, Cleveland, Ohio
Western Gas Construction Co., The, Fort Wayne, Ind.

CEMENT, HIGH TEMPERATURE
Missouri Fire Brick Co., St. Louis, Mo.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.

CHARGING COAL
Bartlett Hayward Co., The, Baltimore, Md.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.
Western Gas Construction Co., The, Fort Wayne, Ind.

CLOTHES DRYERS
Canton Clothes Dryer Co., The, Canton, Ohio.

CHIMNEYS (Radical Brick)
Alphons Custodis Chimney Construction Co., Marquette Bldg., Chicago, Ill.

COAL AND COKE (Conveyors, Crushers, Screeners)
Bartlett Hayward Co., The, Baltimore, Md.
R. H. Beaumont Co., 315 Arch St., Philadelphia, Pa.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.
Riter-Conley Company, Pittsburgh, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.

COAL TAR PRODUCTS & CHEMICALS
Barrett Company, The, 17 Battery Place, New York, N. Y.

COCKS (Ranges, Water Heaters, Service and Meter)
A-B Stove Co., Battle Creek, Mich.
Acme Brass Works, Detroit, Mich.
Aws Mfg. Co., The, 398 Harman St., Brooklyn, N. Y.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Detroit Brass & Malleable Works, Detroit, Mich.
Geo. D. Roper Corp., Rockford, Ill.
Hays Mfg. Co., Inc., Erie, Pa.
H. Mueller Mfg. Co., New York, N. Y., Decatur, Ill.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Kitson Co., 2837 Oakford St., Philadelphia, Pa.
McRae & Roberts Co., The, Detroit, Mich.
Peninsular Brass Works, Detroit, Mich.
Roberts Brass Mfg. Co., The, Detroit, Mich.
Standard Brass Works, Detroit, Mich.

COMPOUND FOR CLEANING GAS METERS AND GAS STOVES
Standard Chemical & Supply Co., Cambridge A, Mass.

COMPRESSORS
C. M. Kemp Mfg. Co., The, Baltimore, Md.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Surface Combustion Co., The 366 Gerard Ave., Bronx, N. Y.

CONDENSERS
Bartlett Hayward Co., The, Baltimore, Md.
Cruse-Kemper Co., Ambler, Pa.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co. Ingram Ave., Trenton, N. J.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Stacey Bros. Gas Construction Co., The, Cincinnati, Ohio
Stacey Manufacturing Co., The, Cincinnati, Ohio.
Steere Engineering Co., Detroit, Mich.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

COOKING AUXILIARIES
G. S. Blodgett Co., The, Burlington, Vt.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.

COOKING AUXILIARIES—(Continued)
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Geo. D. Roper Corp., Rockford, Ill.
Scott Gas Appliance Co., Bond Bldg., Washington, D. C.

COUPLINGS
S. R. Dresser Mfg. Co., Bradford, Pa.

COVERINGS (Cold Pipe, Steam Pipe, Tank and Boiler)
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECALCOMANIA PRODUCTS
Meyercord Co., Inc., The, Chamber of Commerce Bldg., Chicago, Ill.

ELECTRIC CONTROLLING DEVICES
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis., New York, N. Y.

ELEVATORS
Craig Ridgway & Son Co., Coatesville, Pa.
Phillips, Lang & Co., Chicago, Ill.

EXCHANGES (Heat)
Bartlett Hayward Co., The, Baltimore, Md.
Riter-Conley Co., Pittsburgh, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

EXPERT APPRAISAL
Steere Engineering Co., Detroit, Mich.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.

EXTRACTORS (Tar, Dust, Fumes)
Bartlett Hayward Co., The, Baltimore, Md.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

FITTINGS
A-B Stove Co., Battle Creek, Mich.
Acme Brass Works, Detroit, Mich.
Aws Manufacturing Co., New York, N. Y.
Bartlett Hayward Co., The, Baltimore, Md.
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Davis & Farnum Mfg. Co., Waltham, Mass.
Detroit Brass & Malleable Works, Detroit, Mich.
S. R. Dresser Mfg. Co., Bradford, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Kitson Co., 2827 Oakford St., Philadelphia, Pa.
McRae & Roberts Co., The, Detroit, Mich.
H. Mueller Mfg. Co., New York, N. Y., Decatur, Ill.
Peninsular Brass Works, Detroit, Mich.
Roberts Brass Mfg. Co., The, Detroit, Mich.
Geo. D. Roper Corp., Rockford, Ill.
Standard Brass Works, Detroit, Mich.
Welsbach Co., Gloucester, N. J.
Western Gas Construction Co., The, Fort Wayne, Ind.

FITTINGS (Malleable Iron)
Detroit Brass & Malleable Works, Detroit, Mich.
Geo. D. Roper Corp., Rockford, Ill.

FLEXIBLE TUBING AND ENDS
Atlantic Tubing Co., Providence, R. I.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eastman Mfg. Co., Manitowoc, Wis.

FLASHLIGHTS AND BATTERIES
French Battery & Carbon Co., Madison, Wis.
Novo Mfg. Co., 424 W. 33d St., New York, N. Y.

FUEL BRIQUETTING
Foundation Oven Corp., Woolworth Bldg., New York, N. Y.

FURNACES
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon Furnace and Engineering Co., Muncie, Ind.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., The, 1 S. Lafayette St., New York, N. Y.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Russell Engineering Co., St. Louis, Mo.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.

FUSES
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

GAS COAL PRODUCERS
Creech Coal Co., 733 Union Trust Bldg., Cincinnati, Ohio.
Harlan Co-operative Coal Co., Lexington, Ky.

GAS ENGINES
Bartlett Hayward Co., The, Baltimore, Md.

GAS ENGINE COCKS AND VALVES
Standard Brass Works, Detroit, Mich.

GAS IRONS
A-B Stove Co., Battle Creek, Mich.
Benson Mfg. Co., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Strause Gas Iron Co., Philadelphia, Pa.

GAS LEAK INDICATORS
Taylor Instrument Companies, Rochester, N. Y.

GAS LOGS
Strait & Richards, Inc., Newark, N. J.

GAS MAIN BAGS AND GAS MAIN STOPPERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.

GAS MIXERS
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Brass & Malleable Works, Detroit, Mich.
Eriez Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Hale Manufacturing Co., Chicago, Ill.
Hays Manufacturing Co., Inc., Erie, Pa.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa.
C. M. Kemp Mfg. Co., The, Baltimore, Md.
Maxon Furnace & Engineering Co., Muncie, Ind.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.

GAS MIXERS—(Continued)
Geo. D. Roper Corp., Rockford, Ill.
Strait & Richards, Inc. Newark, N. J.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.

GAS PLANTS (Blue)
Bartlett Hayward Co., The, Baltimore, Md.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Improved Equipment Co., The, 24 State St., New York, N. Y.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

GAS PLANTS (OIL)
Bartlett Hayward Co., The, Baltimore, Md.

GAS PLANTS (Carburetted Water)
Bartlett Hayward Co., The, Baltimore, Md.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Equipment Co., The, 24 State St., New York, N. Y.
Stacey Manufacturing Co., The, Cincinnati, Ohio
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

GAS PLANTS (Coal) (Engineers)
Bartlett Hayward Co., The, Baltimore, Md.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Equipment Co., The, 24 State St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
Missouri Fire Brick Co., St. Louis, Mo.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Semet-Solvay Co., Syracuse, N. Y.
Stacey Manufacturing Co., The, Cincinnati, Ohio
Stacey Bros. Gas Construction Co., The, Cincinnati, Ohio
Steere Engineering Co., Detroit, Mich.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

GAS RANGE WATER HEATERS
Elliott Water Heater Co., Inc., 1246 Myrtle Ave., Brooklyn, N. Y.
Geo. D. Roper Corp., Rockford, Ill.

GOVERNORS, PRESSURE VACUUM & PUMP
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.

HEATERS (Room)
American Stove Co., St. Louis Mo.
Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co., Div. Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Erie Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
General Gas Light Co., New York, N. Y., Kalamazoo, Mich.
Grinnell Co., Inc., Providence, R. I.
J. H. Grayson Mfg. Co., The, Athens, Ohio
Hugo Manufacturing Co., West Duluth, Minn.
Illinois Specialty Mfg. Co., Bloomington, Ill.
Kidde & Co., 103 Park Ave., New York, N. Y.
Kennedy-Toombs, Inc., 12 Eleventh Ave., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
New Process Stove Co., Div., Cleveland, Ohio
Ohio State Stove & Mfg. Co., The, Columbus, Ohio
Reliable Stove Co. Div., Cleveland, Ohio
Reznor Mfg. Co., Mercer, Pa.
Roberts & Mander Stove Co., Philadelphia, Pa.
Sanitary Heating Co., The, 233-37th St., Brooklyn, N. Y.
J. B. Slattery & Bro. Inc., 108-110 Lawrence St., Brooklyn, N. Y.
Strait & Richards, Inc., Newark, N. J.
Van Zandt Gas Appliance Co. St. Louis, Mo.
Welsbach Co., Gloucester, N. J.
Western Gas Construction Co., The, Fort Wayne, Ind.
Wheeling Corrugating Co., Wheeling, W. Va.
A. H. Wolff Gas Radiator Co., The, 4 Great Jones St., New York, N. Y.

HEATERS (Garage)
Gallaher Boiler Co., Laclede Gas Bldg., St. Louis, Mo.
Kidde & Co., 103 Park Ave., New York, N. Y.
Wales Co., The, Kalamazoo, Mich.

HEATERS (Pressing and Soldering Irons)
Amercian Stove Co., St. Louis, Mo.
Bryant Heater & Mfg. Co., The, Cleveland, Ohio, Chicago, Ill.
Geo M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Johnson Gas Appliance Co., Ceder Rapids, Iowa
Strait & Richards, Inc., Newark, N. J.

HIGH PRESSURE SYSTEMS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Connersville Blower Co., The, Connersville, Ind.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
C. M. Kemp Mfg. Co., The, Baltimore, Md.
H. Mueller Mfg. Co., New York N. Y., Decatur, Ill.
Needham Gas Appliance Co., The, 1 S. Lafayette St., New York, N. Y.
Selas Co., New York, N. Y.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.

HOLDERS (Structural Steel Works)
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Bartlett Hayward Co., The, Baltimore, Md.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Stacey Bros. Gas Construction Co., The, Cincinnati, Ohio
Stacey Manufacturing Co., The, Cincinnati, Ohio
Western Gas Construction Co., The, Fort Wayne, Ind.

HOT PLATES
American Stove Co., St. Louis, Mo.
A-B Stove Co., Battle Creek, Mich.
Baltimore Gas Appliance & Mfg. Co., The, Baltimore, Md.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eclipse Stove Co., The, Mansfield, Ohio

HOT PLATES—(Continued)
Eriez Stove & Mfg. Co., Erie, Pa.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Michigan Stove Co., The, Detroit, Mich.
Ohio State Stove & Mfg. Co., The, Columbus, Ohio
Rathbone, Sard & Co., Albany, N. Y., Aurora, Ill.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
Union Stove Works, 20 Beekman St., New York, N. Y.
Weir Stove Co., Taunton, Mass.
Wheeling Corrugating Co., Wheeling, W. Va.
A. H. Wolff Gas Radiator Co., The, 4 Great Jones St., New York, N. Y.

INDUSTRIAL FLOORING
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

IRONING MACHINES
American Ironing Machine Co., 168 N. Michigan Ave., Chicago, Ill.

INCINERATORS
Estate Stove Co., Hamilton, Ohio
Odorless Incinerator Co., Philadelphia, Pa.
Ruud Mfg. Co., Pittsburgh, Pa.

INSTRUMENTS (Measuring, Testing and Recording)
American Meter Co., Inc., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Bristol Co., The, Waterbury, Conn.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Foxboro Co., Inc., The, Foxboro, Mass.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
Maryland Meter Works, Baltimore, Md.
D. McDonald & Co., Albany, N. Y.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 2240 Diversey Blvd., Chicago, Ill.
Schaeffer & Budenberg Mfg. Co., The, Brooklyn, N. Y.
Steere Engineering Co., Detroit, Mich.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

INSULATING MATERIALS
Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.

KILNS (For Firing Glass, China and Pottery)
B. F. Drakenfeld & Co., Inc., 50 Murray St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Russell Engineering Co., St. Louis, Mo.

KILNS
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.

LABORATORY (Flash and Fire Test Apparatus)
Taylor Instrument Companies, Rochester, N. Y.

LIGHTERS (Ranges)
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Michigan Stove Co., The Detroit, Mich.
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Geo. D. Roper Corp., Rockford, Ill.
Safety Gas Lighter Co., Lynn, Mass.
J. M. Sherwood Co., New York, N. Y.
Strause Gas Iron Co., Philadelphia, Pa.
Welsbach Co., Gloucester, N. J.

LIGHTING (Fixtures)
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Gas Domes, Portables, etc.)
Kramer Bros. Lamp Co., 585 Broadway, New York, N. Y.
Royal Art Glass Co., 243 Canal St., New York, N. Y.
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Glassware)
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Incidentals)
Storrs Mica Co., Owego, N. Y.

LIGHTING (Mantles)
General Gas Light Co., New York, N. Y., Kalamazoo, Mich.
Lindsay Light Co., New York, N. Y., Chicago, Ill.
Welsbach Co., Gloucester, N. J.

LUX MATERIAL
Alpha-Lux Co., Inc., 192 Front St., New York, N. Y.

METAL RECEPTACLES
American Gas Furnace Co., 24 John St., New York, N. Y.
Wm. M. Crane Co., 16 W. 33d St., New York, N. Y.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

METERS
American Meter Co., Inc., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Cleveland Gas Meter Co., Cleveland, Ohio
Connersville Blower Co., The, Connersville, Ind., New York, N. Y.
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Equitable Meter Co., Pittsburgh, Pa.
Foxboro Co., Inc., The, Foxboro, Mass.
John J. Griffin & Co., 1513 Race St., Philadelphia, Pa.
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Metric Metal Works, Erie, Pa.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 2240 Diversey Blvd., Chicago, Ill.
Rotary Meter Co., 52 Vanderbilt Ave., New York, N. Y.
Sprague Meter Co., The, Bridgeport, Conn.

METERS—(Continued)
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Taylor Instrument Companies, Rochester, N. Y.

METERS (Air and Steam)
Pittsburgh Meter Co., East Pittsburgh, Pa.
Republic Flow Meters Co., 2240 Diversey Blvd., Chicago, Ill.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.

METER CONNECTIONS, SEALS, Etc.
American Meter Co., Inc., New York, N. Y.
Cleveland Gas Meter Co., Cleveland, Ohio
S. R. Dresser Mfg. Co., Bradford, Pa.
Equitable Meter Co., Pittsburgh, Pa.
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
Lattimer Stevens Co., The, Columbus, Ohio
D. McDonald & Co., Albany, N. Y.
H. Mueller Mfg. Co., New York, N. Y., Decatur, Ill.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Sprague Meter Co., The, Bridgeport, Conn.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.

METERS (Steam, Condensation, Gasoline, Oil, Hot and Cold Water)
Pittsburgh Meter Co., East Pittsburgh, Pa.
Republic Flow Meters Co., 2240 Diversey Blvd., Chicago, Ill.

METER PROVERS
American Meter Co., Inc., New York N. Y.
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., Philadelphia, Pa.
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
Maryland Meter Works, Baltimore, Md.
D. McDonald & Co., Albany, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.

METER SEALS AND ADJUSTABLE CONNECTIONS
Lattimer-Stevens Co., The, Columbus, O.

METER SHELF
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Lattimer-Stevens Co., The, Columbus, O.

OFFICE LABOR SAVING DEVICES
Addressograph Co., Chicago, Ill.
Elliott-Fisher Co., Harrisburg, Pa.
Kalamazoo Loose-Leaf Binder Co., Kalamazoo, Mich.
Library Bureau, Boston, Mass.
Remington Typewriter Co., 374 Broadway, New York, N. Y.
Underwood Typewriter Co., 30 Vesey St., New York, N. Y.

OIL (Diaphragm)
John J. Griffin & Co., 1513 Race St., Philadelphia, Pa.
Superior Meter Co., Bush Terminal Bldg., Brooklyn, N. Y.

OVENS (Baking and Cooking)
G. S. Blodgett Co., The, Burlington, Vt.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Crandall-Pettee Co., The, 150 Franklin St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Elgin Stove & Oven Co., Elgin, Ill.
Famous Oven Manufacturing Co., 110 W. 42d St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
Ohio State Stove & Mfg. Co., The, Columbus, Ohio.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.
Union Steel Products Co., Ltd., The, Albion, Mich.

OVENS (Annealing, Japanning, Drying, Core, etc.)
Famous Oven Manufacturing Co., 110 W. 42d St., New York, N. Y.
Gehnrich Indirect Heat Oven Co., Inc., Long Island City, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc. Providence, R. I.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
C. M. Kemp Mfg. Co., The, Baltimore, Md.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
Surface Combustion Co., The, 366 Gerard Ave., Bronx, N. Y.
Union Steel Products Co., The, Ltd., Albion, Mich.
Young Bros. Co., Detroit, Mich.

OVENS (Warming)
G. S. Blodgett Co., The, Burlington, Vt.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
Union Steel Products, Co., Ltd., The, Albion, Mich.

PACKINGS (Rods, Plunger, Piston and Flange)
Johns-Manville, Inc., Madison Ave., and 41st St., New York, N. Y.

PHOTOMETERS
American Meter Co., Inc., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Maryland Meter Works, Baltimore, Md.
D. McDonald & Co., Albany, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

PIPE
Bartlett Hayward Co., The, Baltimore, Md.
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburg, Pa.
Steere Engineering Co., Detroit, Mich.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE CASTINGS AND SPECIALS
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Bartlett Hayward Co., The, Baltimore, Md.
Davis & Farnum Mfg. Co., Waltham, Mass.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Isbell-Porter Co., Newark, N. J.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Stacey Manufacturing Co., The, Cincinnati, Ohio
Western Gas Construction Co., The, Fort Wayne, Ind.

PIPE CLAMPS AND SLEEVES
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
National Machine Works, Sheffield & North Aves., Chicago, Ill.

PIPE PACKING
Celite Products Co., 11 Broadway, New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE TOOLS (Caulking, Cutting, Tapping)
Grinnell Co., Inc., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., Decatur, Ill.
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

PLATE WARMERS
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22d St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Geo. D. Roper Corp., Rockford, Ill.

PORCELAIN ENAMEL PARTS (Stoves, Lamps, Linings, Stamping and Spinnings)
Baltimore Enamel & Novelty Co., Baltimore, Md.
Chicago Vitreous Enamel Product Co., 1407 So. 55th Court, Cicero, Ill.
Eclipse Gas Stove Co., Rockford, Ill.
Enamel Products Co., The, Cleveland, Ohio
Porcelain Enamel & Mfg. Co., The, Baltimore, Md.
Union Steel Products Co., Ltd., The, Albion, Mich.

PORCELAIN ENAMEL PLANTS (Installers)
Porcelain Enamel & Mfg. Co., The, Baltimore, Md.

PRESSURE GAUGES
American Meter Co., Inc., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bryant Heater & Mfg. Co., The, Cleveland, Ohio
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Maryland Meter Works, Baltimore, Md.
D. McDonald Co., Albany, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Schaeffer & Budenberg Mfg. Co., The, Brooklyn, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Taylor Instrument Cos., Rochester, N. Y.
Western Gas Construction Co., The, Fort Wayne, Ind.

PRESSURE GAUGES (Boiler, Naphtha, Oil, Steam, Tar)
M. T. Davidson Co., 154 Nassau St., New York, N. Y.

PYROMETERS (Indicating and recording)
Taylor Instrument Cos., Rochester, N. Y.

PUMPS
Connersville Blower Co., The, Connersville, Ind.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Geo. D. Roper Corp., Rockford, Ill.
P. H. & F. M. Roots Co., The, Connersville, Ind.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Western Gas Construction Co., The, Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

PURIFIERS
Bartlett Hayward Co., The, Baltimore, Md.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Cleveland, Ohio
Improved Equipment Co., The, 24 State St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
Riter-Conley Co., Pittsburgh, Pa.
Stacey Bros. Gas Construction Co., The, Cincinnati, Ohio
Stacey Manufacturing Co., The Cincinnati, Ohio
Steere Engineering Co., Detroit, Mich.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

PURIFYING MATERIALS
Alpha-Lux Co., Inc., 192 Front St., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York.
Gas Purifying Materials Co., Long Island City, N. Y.
J. F. Henderson Co., 1707 Commonwealth Bldg., Pittsburgh, Pa.
Iron Hydroxide Co., Paschall Station, Philadelphia, Pa.
Iron Oxide Products, Inc., 1301 S. 55th Court, Cicero, Ill.
Eph Lyon, Trust Company Bldg., Franklin, Pa.

RADIANT HEATERS
General Gas Light Co., New York, N. Y., Kalamazoo, Mich.
J. H. Grayson Mfg. Co., The, Athens, Ohio
Kennedy-Toombs, Inc., 126 Eleventh Ave., New York, N. Y.
Roberts and Mander Stove Co., Philadelphia, Pa.
Welsbach Co., Gloucester, N. J.

RADIATORS
American Gas Appliance Co., 108 Lawrence St., Brooklyn, N. Y.
Buffalo Gas Steam Radiator Co., Gowanda, N. Y.
James B. Clow & Sons, Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Erlez Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Hugo Manufacturing Co., West Duluth, Minn.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Kidde & Co., 103 Park Ave., New York, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
A. H. Wolff Gas Radiator Co., The, 4 Great Jones St., New York, N. Y.

RANGES (Domestic)
A-B Stove Co., Battle Creek, Mich.
American Range & Foundry Co., Minneapolis, Minn.
American Stove Co., St. Louis, Mo.
Baltimore Gas Appliance & Mfg. Co., The, Baltimore, Md.
Bartlett & Co., Inc., Philadelphia, Pa.
Century Stove & Mfg. Co., Johnstown, Pa.
Chambers Manufacturing Co., Shelbyville, Ind.
Geo. M. Clark & Co., Chicago, Ill.
Cleveland Co-Operative Stove Co., The Cleveland, Ohio
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32nd St., New York, N. Y.

RANGES (Domestic)—(Continued)
Cribben & Sexton Co., Chicago, Ill.
Crown Stove Works, Chicago, Ill.
Dangler Stove Co. Div., Cleveland, O.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co. Div., Rockford, Ill.
Eclipse Stove Co., The, Mansfield, O.
Elgin Stove & Oven Co., Elgin, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., The, Hamilton, O.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Malleable Iron Range Co., Beaver Dam, Wis.
Michigan Stove Co., The, Detroit, Mich.
National Stove Co. Div., Lorain, O.
New Process Stove Co. Div., Cleveland, O.
Ohio State Stove & Mfg. Co., Columbus, O.
Peninsular Stove Co., The, Detroit, Mich.
Quick Meal Stove Co. Div., St. Louis, Mo.
Rathbone, Sard & Co., Albany, N. Y., Aurora, Ill.
Reliable Stove Co. Div., Cleveland, O.
Roberts & Mander Stove Co., Philadelphia, Pa.
Scott Gas Appliance Co. Inc., Bond Bldg., Washington, D. C.
J. M. Sherwood Co., 154 Chambers St., New York, N. Y.
Trenkamp Stove & Mfg. Co., The, Cleveland, O.
Union Stove Works, 70 Beekman St., New York, N. Y.
Vesta Gas Range & Mfg. Co., Chattanooga, Tenn.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.
Wheeling Corrugating Co., Wheeling, W. Va.
A. H. Wolff Gas Radiator Co., The, New York, N. Y.

RANGES (Hotel)
American Stove Co., St. Louis, Mo.
Baltimore Gas Appliance & Mfg. Co., The, Baltimore, Md.
Geo. M. Clark & Co. Div., Chicago, Ill.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32nd St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Eclipse Gas Stove Co. Div, Rockford, Ill.
Estate Stove Co., The, Hamilton, O.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Michigan Stove Co., The, Detroit, Mich.
Roberts & Mander Stove Co., Philadelphia, Pa.

REFRACTORY MATERIALS
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Improved Equipment Co., The, 24 State St., New York, N. Y.
Johns-Manville Inc., Madison Ave & 41st St., New York, N. Y.
Missouri Fire Brick Co., St. Louis, Mo.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.
Riter-Conley Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
G. F. Schmidt, Chicago, Ill.
United States Refractories Corp., Mount Union, Pa.

REGULATORS (Governors)
Chaplin-Fulton Mfg. Co., The, Pittsburgh, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Connersville Blower Co., The, Connersville, Ind.
Equitable Meter Co., Pittsburgh, Pa.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Equipment Co., The, 24 State St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
H. Mueller Mfg. Co., New York, N. Y., Decatur, Ill.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Reynolds Gas Regulator Co., Anderson, Ind.
Sprague Meter Co., The, Bridgeport, Conn.
Steere Engineering Co., Detroit, Mich.
Western Gas Construction Co., The, Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 W. 13th St., New York, N. Y.

REPAIRS (Gas Meters and Appliances)
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Bush Terminal Bldg., Brooklyn, N. Y.
Western Gas Construction Co., The, Fort Wayne, Ind.

RETORTS
Gas Machinery Co., Inc., The, Cleveland, Ohio
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Improved Equipment Co., The, 24 State St., New York, N. Y.
Missouri Fire Brick Co., St. Louis, Mo.
Parker-Russell Mining & Mfg. Co., The, St. Louis, Mo.
Riter-Conley Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
West Gas Improvement Co. of America, 150 Nassau St., New York, N. Y.

ROOFING
Johns-Manville, Inc., Madison Ave., and 41st St., New York, N. Y.

ROOF CEMENTS
Johns-Manville, Inc., Madison Ave. and 41st St., New York, N. Y.

RUST PREVENTIVE
Superior Laboratories, Grand Rapids, Mich.

SAFETY DEVICES (Gas Masks, Oxygen Breathing Apparatus, etc.)
Mine Safety Appliances Co., Pittsburgh, Pa.

SCRUBBERS
Bartlett Hayward Co., The, Baltimore, Md.
Davis & Farnum Mfg. Co., Waltham, Mass.
Foundation Oven Corp., Woolworth Bldg., New York, N. Y.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Equipment Co., The, 24 State St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
Koppers Co., The, Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Stacey Bros. Gas Construction Co., The, Cincinnati, O.
Stacey Manufacturing Co., The, Cincinnati, O.
Steere Engineering Co., Detroit, Mich.
U. G. I. Contracting Co., The, Broad & Arch Sts., Philadelphia, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

SELLING AGENTS
J. M. Sherwood Co., 154 Chambers St., New York, N. Y.
Kidde & Co., 103 Park Ave., New York, N. Y.

SERVICE BOXES, CLAMPS, Etc.
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
H. Mueller Mfg. Co., New York, N. Y., Decatur, Ill.

SERVICE VALVES (Gate Valves)
Ludlow Valve Mfg. Co., The, Ft. Adams St., Troy, N. Y.

SPECIALS—CAST IRON
Western Gas Construction Co., The, Fort Wayne, Ind.

STEAM TRAPS
Johns-Manville Inc., Madison Ave. & 41st St., New York, N. Y.

STILLS (Benzol, Toluol)
Bartlett Hayward Co., The, Baltimore, Md.
Foundation Oven Corp., Woolworth Bldg., New York, N. Y.
Koppers Co., The, Pittsburgh, Pa.
Western Gas Construction Co., The, Fort Wayne, Ind.

STOPPERS (Gas Main)
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.

STOVES (Confectioners, Laundry, Tailor)
American Stove Co., St. Louis, Mo.
A-B Stove Co., Battle Creek, Mich.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 33d St., New York, N. Y.
General Gas Appliance Co., The, 103 Park Ave., New York, N. Y.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Geo. D. Roper Corp., Rockford, Ill.

STRUCTURAL STEEL WORKS (See Holders)

TANKS (Ammonia, Oil, Water)
Bartlett Hayward Co., The, Baltimore, Md.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Metcalfe-Shaw Corp., 1304 Flatbush Ave., Brooklyn, N. Y.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Stacey Bros. Gas Construction Co., The, Cincinnati, O.
Stacey Manufacturing Co., The, Cincinnati, O.
Steere Engineering Co., Detroit, Mich.
Western Gas Construction Co., The, Fort Wayne, Ind.

TAR DEHYDRATION
Metcalfe-Shaw Corp., 1304 Flatbush Ave., Brooklyn, N. Y.
Sharples Specialty Co., The, New York, N. Y.

THERMOMETERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Taylor Instrument Cos., Rochester, N. Y.
Schaeffer & Budenberg Mfg. Co., The, Brooklyn, N. Y.
Western Gas Construction Co., The, Fort Wayne, Ind.

THERMOSTATS
Bryant Heater & Mfg. Co., The, Cleveland, Ohio
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Kidde & Co., 103 Park Ave., New York, N. Y.
Minneapolis Heat Regulator Co., Minneapolis, Minn.
B. Ryan & Co., 372 W. 15th St., New York, N. Y.
Van Zandt Gas Appliance Co., 4050 Olive St., St. Louis, Mo.
H. A. Wilson Co., The, 97 Chestnut St., Newark, N. J.

THERMO VALVES
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Pittsburg Water Heater Co., Pittsburgh, Pa.
Robertshaw Mfg. Co., Youngwood, Pa.
H. A. Wilson Co., The, 97 Chestnut St., Newark, N. J.

THORIUM
Welsbach Co., Gloucester, N. J.

TRENCH WORK
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.

TURBINE (Steam)
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

VALVES
Aws Mfg. Co., The, 398 Harman St., Brooklyn, N. Y.
Bartlett Hayward Co., The, Baltimore, Md.
Bryant Heater & Mfg. Co., The, Cleveland, O.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Inc., The, Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Improved Equipment Co., The, 24 State St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
Ludlow Valve Mfg. Co., The, Troy, N. Y.
Stacey Manufacturing Co., The, Cincinnati, O.
Steere Engineering Co., Detroit, Mich.
Western Gas Construction Co., The, Fort Wayne, Ind.

VALVES (Needle Valves for Gas Stoves)
Acme Brass Works, Detroit, Mich.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Detroit Brass & Malleable Works, Detroit, Mich.
Peninsular Brass Works, Detroit, Mich.
McRae & Roberts Co., The, Detroit, Mich.
Roberts Brass Mfg. Co., The, Detroit, Mich.

WASHING MACHINES
Detroit Washing Machine Corp., Detroit, Mich.
"1903" Washer Co., The, Binghamton, N. Y.

WATER HEATERS
A-B Stove Co., Battle Creek, Mich.
Baltimore Gas Appliance & Mfg. Co., The, Baltimore, Md.
Bartlett & Co., Inc., Philadelphia, Pa.
Bastin-Morley Co., La Porte, Ind.
Bryant Heater & Mfg. Co., The, Cleveland, O.
Geo. M. Clark & Co., Div., Chicago, Ill.
Cleveland Heater Co., The, Cleveland, O.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32nd. St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Elliott Water Heater Co., Inc., Brooklyn, N. Y.
Estate Stove Co., Hamilton, O.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Hoffman Heater Co., The, Lorain, O.
Humphrey Co., Div., Kalamazoo, Mich.
Kidde & Co., 103 Park Ave., New York, N. Y.
Kompak Company, The, New Brunswick, N. J.
Lawson Mfg. Co., Pittsburgh, Pa.
Lovekin Water Heater Co., The, 39 Laurel St., Philadelphia, Pa.
Michigan Stove Co., The, Detroit, Mich.
New Process Stove Co., Div., Cleveland, O.
Peninsular Stove Co., Detroit, Mich.

WATER HEATERS—(Continued)
Philadelphia Stove Co., Philadelphia, Pa.
Pittsburg Water Heater Co., Pittsburgh, Pa.
Rathbone, Sard & Co., Albany, N. Y., Aurora, Ill.
Reliable Stove Co., Div., Cleveland, O.
B. Ryan & Co., 372 W. 15th St., New York, N. Y.
Ruud Mfg. Co., Pittsburgh, Pa.
Sands Mfg. Co., The, Cleveland, O.
Trenkamp Stove & Mfg. Co., The, Cleveland, O.
Van Zandt Gas Appliance Co., 4060 Olive St., St. Louis, Mo.
Wales Co., The, Kalamazoo, Mich.

WATER SOFTENERS
Refinite Co., Inc., The, Omaha, Neb.

WATER STILLS (Gas Heated)
Improved Appliance Co., The, 419 Kent Ave., Brooklyn, N. Y.
Young Bros. Co., Detroit, Mich.

WELDED STEEL PIPE
Bartlett Hayward Co., The, Baltimore, Md.
Steere Engineering Co., Detroit, Mich.
Western Gas Construction Co., The, Fort Wayne, Ind.

WELDING
S O S Welding Corp., 235 Sixth St., Brooklyn, N. Y.

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—C. S. Bagg, Montreal Light, Heat & Power Co., Montreal, Que.
Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto
Conv., 1922

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21, 1919
Pres.—E. H. Rosenquest, Bronx Gas & Electric Co., Bronx, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., 1922

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919
Pres.—H. H. Clark, 325 Peoples Gas Bldg., Chicago, Ill.
Sec.-Tr.—R. V. Prather, 3051 Illinois Mine Workers Bldg., Springfield, Ill.
Conv., 1922

Indiana Gas Association

Date of Affiliation—April 24, 1919
Pres.—Morse Dell Plain, No. Indiana Gas & Elec. Co., Hammond, Ind.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1922

Iowa District Gas Association

Date of Affiliation—May 21, 1919
Pres.—C. N. Chubb, United Light & Rwys. Co., Davenport, Ia.
Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., 1922

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—J. A. Brown, Hodenpyl, Hardy & Co., Jackson, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., 1922

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920
Pres.—H. Spoehrer, Union Elec. Lt. & Pr. Co., St. Louis, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Wiley F. Corl, Chmn. Affiliation Com., Missouri Utilities Co., Mexico, Mo.
Conv., 1922

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919
Pres.—Burton Smart, Portland Gas Lt. Co., Portland, Me.
Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
Conv., 1922

Gas Sales Association of New England

Date of Affiliation—Oct. 1, 1919
Gov.—H. J. Pettengill, Jr., Blackstone Valley Gas & Electric Co., Pawtucket, R. I.
Sec.—M. Bernard Webber, 150 Congress St., Boston, Mass.
Annual Meeting, 1922

New Jersey Gas Association

Date of Affiliation—April 25, 1919
Pres.—H. H. Newman, Public Service Gas Co., Trenton, N. J.
Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J., Long Branch, N. J.
Conv., 1922

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—Henry Bostwick, Pacific Gas & Electric Co., San Francisco, Cal.
Sec.-Tr.—W. M. Henderson, 812 Howard St., San Francisco, Cal.
Conv.—Santa Barbara, Cal., September, 1922.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919
Pres.—E. L. Smith, Towanda Gas Co., Towanda, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., 1922

South Central Gas Association

Date of Affiliation—Oct. 15, 1919
Pres.—Frank L. Weisser, San Antonio Public Service Co., San Antonio, Texas.
Sec.-Tr.—S. J. Ballinger, San Antonio Public Service Co., San Antonio, Tex.
Conv., 1922

Southern Gas Association

Date of Affiliation—May 20, 1919
Pres.—L. I. Pollitt, Southern Gas & Electric Corpn., Lexington Bldg., Baltimore, Md.
Sec.-Tr.—G. H. Smith, City Gas Co., Norfolk, Va.
Conv., 1922

Wisconsin Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—J. P. Pulliam, Wisconsin Public Service Co., Milwaukee, Wis.
Sec.-Tr.—Henry Harman, 182 Wisconsin St., Milwaukee, Wis.
Conv., Hotel Pfister, Milwaukee, Wisc., Mar. 22, 23, 24, 1922.

Employment Bureau

SERVICES REQUIRED

WANTED—Fitter who can do good work on installation of water heaters, ranges and who thoroughly understands Gas Company appliance work. Address A. G. A.
Key No. 01.

WANTED—A Graduate Gas Engineer, 30 to 35 years of age, with manufacturing and distribution experience—for Industrial Fuel sales work to large customers. Good address and selling ability required. One with some knowledge of Industrial Gas Fuel problems preferred, though this is not essential. Write giving particulars of training, experience and salary required. Address R. R. Young, Public Service Gas Co., Newark, N. J.

SALES EXECUTIVE—A public utility company operating in a large territory near New York is seeking the services of an Executive who can qualify as a Rate Analyst in the field of Gas and Electric rates and combine the Executive ability necessary to direct a Sales Organization. College graduate preferred. Position warrants large salary and offers an exceptional opportunity for extra compensation based on future growth. Communications are wanted only from men who are clearly qualified by character and ability. Address A. G. A.
Key No. 02.

SERVICES OFFERED

WANTED—Position as executive in a local office of a gas or a combination gas and electric company. Have had a practical experience in all branches of commercial utility work. Have been successful in dealing with the public and promoting good will of utility companies. Educated in commercial and accounting methods as compiled by N. C. G. A. and N. E. L. A. Well acquainted in office routine and very exact on details and execution of same. Address A. G. A.
Key No. 114.

GAS APPLIANCE SALESMAN—Especially trained in water and house heating; 15 years' experience; desires selling position, either road or local, with aggressive appliance manufacturer or gas company. Will furnish best selling reference. Drawing account against commission. Address A. G. A.
Key No. 125.

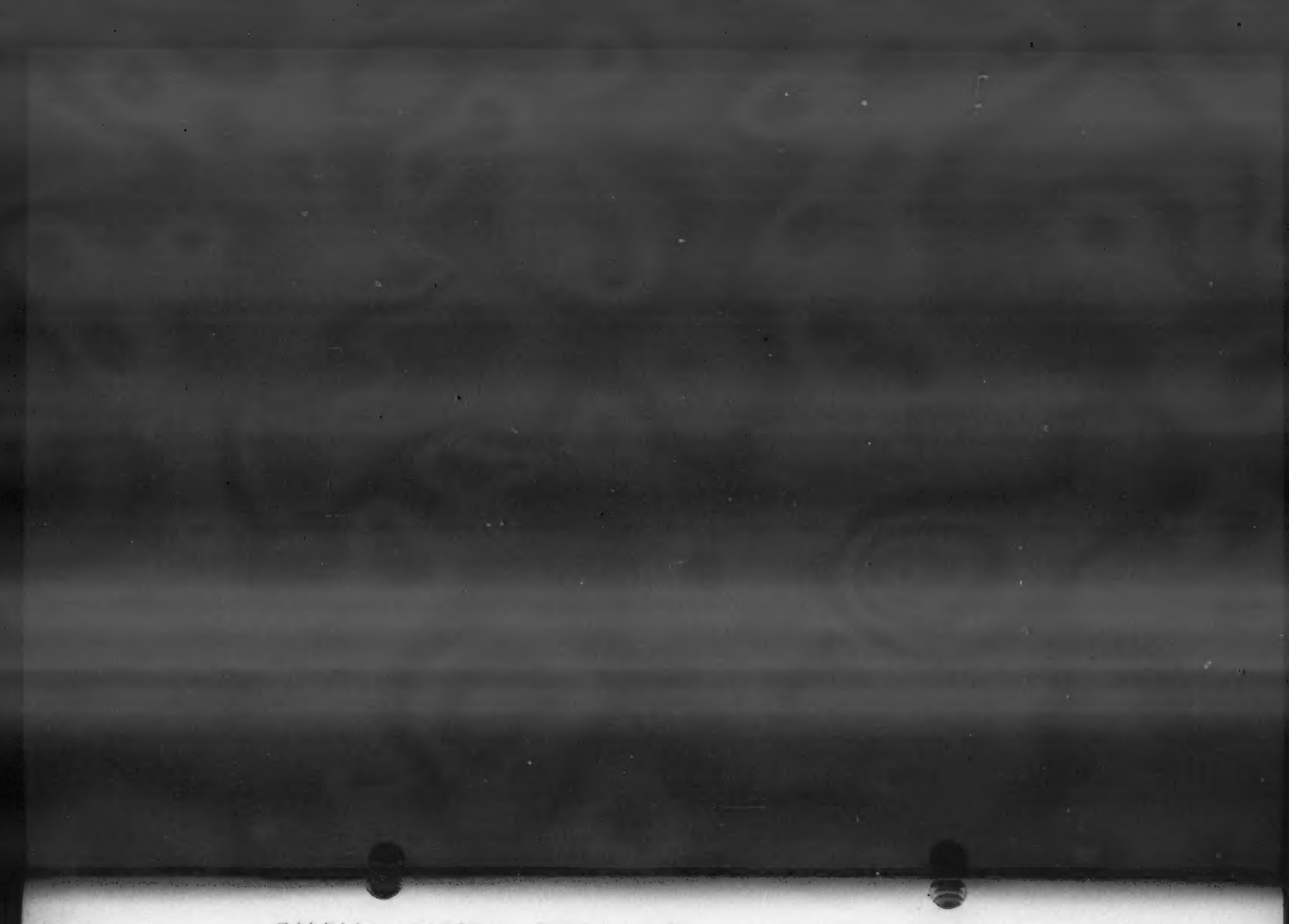
WANTED—Position by a man of large general experience in gas business who has made a special study of sales promotion problems, and who would prove valuable as an assistant to a busy executive in any department. Address A. G. A.
Key No. 134.

ENGINEER—Producing results in operating desires to make change, either as Engineer or Assistant Engineer of Works with output over 20,000,000 daily output. Or in Managing capacity. Address A. G. A.
Key No. 135.

AS MANAGER OR SUPERINTENDENT—39 years old, 15 years experience as Superintendent, 2 years in By-Product Coke Plants. Familiar with Commercial and Accounting work. Present Supervising several small plants. References.
Address Key No. 136.

WANTED—Position as Industrial Fuel Engineer or manufacturer's representative of Domestic or Industrial appliances seeks employment. Prefers Eastern territory but will consider other location. Moderate salary and commission or straight salary. 34 years of age. Married. Reliable references. Address A. G. A.
Key No. 137.

WANTED—Gas engineer, 38, with 15 years' experience in the manufacture, distribution, sales and industrial fuel end of the business, wishes to connect up at once with go-ahead public utility or equipment manufacturer. Competent executive and good salesman. Address A. G. A.
Key No. 138.



AMERICAN GAS ASSOCIATION, INC.

HEADQUARTERS 130 EAST 15TH ST., NEW YORK, N. Y.

Officers and Directors

PRESIDENT	DANA D. BARNUM	Boston, Mass.
VICE-PRESIDENT	R. B. BROWN	Milwaukee, Wis.
TREASURER	H. M. BRUNDAGE	New York, N. Y.
SECTIONAL VICE-PRES	C. N. CHUBB	Davenport, Iowa
SECTIONAL VICE-PRES	A. P. POST	Philadelphia, Pa.
SECTIONAL VICE-PRES	J. S. DuHART	Newark, N. J.
SECTIONAL VICE-PRES	E. HAASE	Milwaukee, Wis.
SECTIONAL VICE-PRES	A. A. HIGGINS	Providence, R. I.

CHARLES A. MONROE	Chicago, Ill.
GEORGE B. CORTELYOU	New York, N. Y.
SAMUEL T. BODINE	Philadelphia, Pa.
R. C. CONGDON	Atlanta, Ga.
MARTIN B. DALY	Cleveland, Ohio.
CHARLES H. DICKEY	New York, N. Y.
HENRY L. DOHERTY	New York, N. Y.
L. R. DUTTON	Jenkintown, Pa.
W. G. GRIBBEL	Philadelphia, Pa.
ARTHUR HEWITT	Toronto, Can.
C. L. HOLMAN	St. Louis, Mo
J. B. KLUMPP	Philadelphia, Pa.
F. H. KNAPP	Pittsburgh, Pa.
A. B. MACBETH	Los Angeles, Cal.
THOMAS H. McCARTER	Newark, N. J.
EMERSON McMILLIN	New York, N. Y.
GEORGE D. ROPER	Rockford, Ill.

Section Officers

ACCOUNTING—Chairman	E. HAASE	Milwaukee, Wis.
Vice-Chairman	J. W. HEINS	Philadelphia, Pa.
Secretary	H. W. HARTMAN	Ass'n Headqtrs.
ADVERTISING—Chairman	A. A. HIGGINS	Providence, R. I.
Vice-Chairman	B. J. MULLANEY	Chicago, Ill.
Secretary	C. W. PERSON	Ass'n Headqtrs.
COMMERCIAL—Chairman	A. P. POST	Philadelphia, Pa.
Vice-Chairman	Wm. GOULD	Boston, Mass.
Secretary	LOUIS STOTZ	Ass'n Headqtrs.
MANUFACTURERS—Chairman	J. S. DuHART	Newark, N. J.
Vice-Chairman	F. A. LEMKE	Kalamazoo, Mich.
Secretary	P. H. HALL	Ass'n Headqtrs.
TECHNICAL—Chairman	C. N. CHUBB	Davenport, Iowa
Vice-Chairman	P. C. WEBER	New York, N. Y.
Secretary	H. W. HARTMAN	Ass'n Headqtrs.

SECRETARY-MANAGER	OSCAR H. FOGG	Ass'n Headqtrs.
ASS'T SECRETARY-MANAGER	LOUIS STOTZ	Ass'n Headqtrs.
ASS'T SECRETARY-MANAGER	PERCY H. HALL	Ass'n Headqtrs.
ASS'T TREASURER	W. CULLEN MORRIS	New York, N. Y.